

# Sinclair programs

Quasimodo  
Laser Bikes

Jet Boat  
Space War

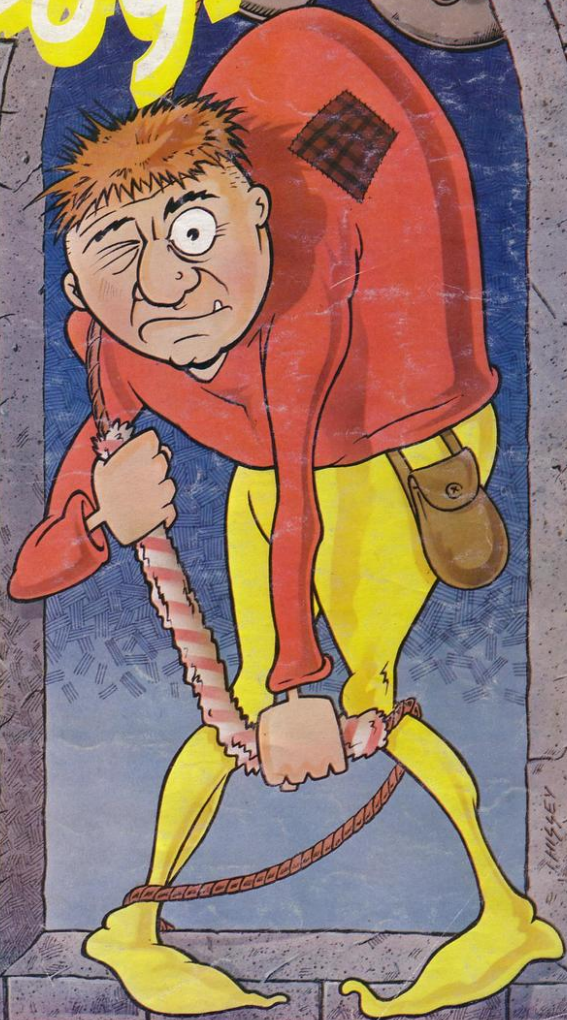
Screen  
Flash

Hurkle

Chord  
Master

Silly Moo

Alom



30 programs for  
the Spectrum  
ZX80 and  
ZX81



# SPOT THE DIFFERENCE!

Choosing which game to buy from the mountain available is a difficult job, especially when everyone claims to produce the best on the market. But how can you tell the best from the rest? To help you decide, read on. . .



## THE DUNGEON MASTER

Let your Spectrum be your guide in a totally new dimension in adventures in the true spirit of traditional role playing games where YOU design the scenario.

"I have been a Dungeons and Dragons fan for several years. The package provides excellent entertainment for all fans of the cults and should prove a good introduction to the game".

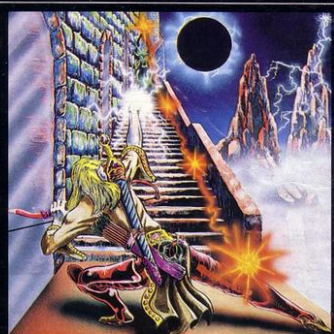
.....Sinclair User.  
"Highly recommended for its versatility, originality and quality. Definitely well worth obtaining."  
.....ZX Computing.

**ZX Spectrum 48K** £7.50  
Written by Graham Stafford.

## What the real critics say. . .

Very rarely have software titles produced such universal acclaim as 'Halls of the Things' and 'The Dungeon Master'. Now, with three brand new programs, Crystal continues to set the standard of software excellence. The difference is obvious - the choice is yours:

**The Best or The Rest.**

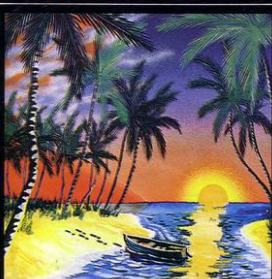


## HALLS OF THE THINGS

A stunning multi-level maze 'arcade - adventure'.  
"Excellent and dangerously addictive - could change the Spectrum games scene overnight".  
.....Sinclair User.

"Spectacular - One of the best games I've seen, finely balanced between simplicity and addictiveness - superb graphics and colour - I CAN'T RECOMMEND IT HIGHLY ENOUGH".  
.....Popular Computing Weekly.

**ZX Spectrum 48K** £7.50  
Written by Neil Mottershead, Simon Brattel and Martin Horsley.



## THE ISLAND

The ultimate test of logic and deduction! Can you solve the hidden mysteries of the South Pacific Island on which you have been stranded - and escape alive! A brilliant classic style adventure game to fascinate and frustrate you for months!

**ZX Spectrum 48K** £7.50

Written by Martin H. Smith.



## INVASION OF THE BODY SNATCHERS!

At last! A version as fast and furious and as frustratingly addictive as the arcade original. Landers, Mutants, Bombers, Pods, Swimmers and much much more combine to produce the ultimate space game!

**ZX Spectrum 48K** £6.50

Written by Simon Brattel and Neil Mottershead.



## ROMMEL'S REVENGE

A brilliant interpretation of the most visually stunning arcade game of all time. Superb high resolution 3D graphics with full perspective plus a host of new and exciting features make Rommel's Revenge the most spectacular game ever produced for your Spectrum!

**ZX Spectrum 48K** £6.50

Written by Martin Horsley.



## Please Supply:

- Invasion of the Body Snatchers ☐  
Rommel's Revenge ☐ The Island ☐  
Halls of the Things ☐ The Dungeon Master ☐  
Catalogue (please enclose SAE 6in. x 9in.) ☐

I enclose cheque/PO for.....

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ADDRESS.....

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Instructions for graphics characters are printed in lower-case letters in our listings. They are enclosed by brackets and separated by colons to distinguish them and the brackets and colons should not be entered.

Inverse characters are represented by the letter "i" and graphics characters by "g". Thus an inverse W would be represented by "iw", a graphics W by "gw", and an inverse graphics W by "igw".

Spaces are represented by "sp" and inverse spaces by "isp". Whenever any character is to be used more than once, the number of times it is to be used is shown before it, together with a multiplication sign. Thus "6\*isp" means six inverse spaces and "(g4:4\*id:3)" would be entered as a graphic four, followed by an inverse four repeated four times, followed by a graphics three.

Where whole words are to be written in inverse letters they appear in the listings as lower-case letters. Letters to be entered in graphics mode on the Spectrum are underlined.

Inverse characters may be entered on the ZX-81 by changing to graphics mode and then typing the appropriate characters and on the Spectrum by changing to inverse video and typing the appropriate letters. Graphics characters may be entered on the ZX-81 by changing to graphics mode and then pressing symbol shift while the appropriate characters are entered. On the Spectrum graphics characters may be obtained by changing to graphics mode and then pressing the appropriate character. User-defined graphics will appear as normal letters until the program has been RUN.



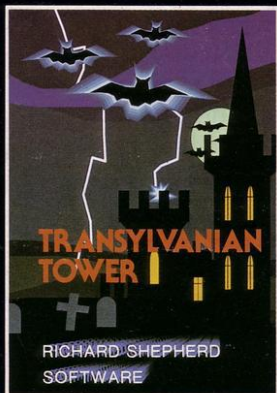
# "ADVENTURES IN

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AND ALL LEADING

## Transylvanian Tower

A spine chilling adventure... enter via the dungeons... navigate your way through 500 3-D rooms... survive the swooping vampire bats... reach the terrifying top... confront and kill Count Kreepie, ridding the world of this Transylvanian Terror.

Can you survive the Top of the Tower? Full save routine for use during the hours of darkness! 48K Spectrum £6.50

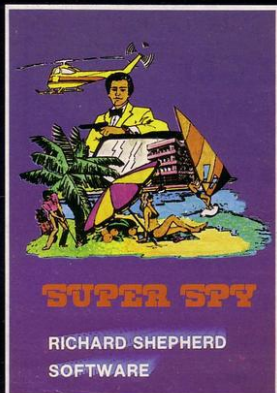


## Super Spy

Locate the secret island hideaway of the mysterious meglomaniac Dr. Death.

Follow his trail across continents, through complex puzzles and 3-D mazes. Discover the entrance to his underground lair — but beware — even with your death-defying gadgets his evil henchmen may still win the day!

With save routine for part time secret agents! 48K Spectrum £6.50



## Devils of the Deep

Can you discover the fabled treasure by lethal crabs and menacing elephants of the Lost City as you wade through ancient columns. Explore the horrors of the treacherous seabed, each with its own dangers.

Sensational 3-D graphics used as never before! 48 K Spectrum £6.50. Full

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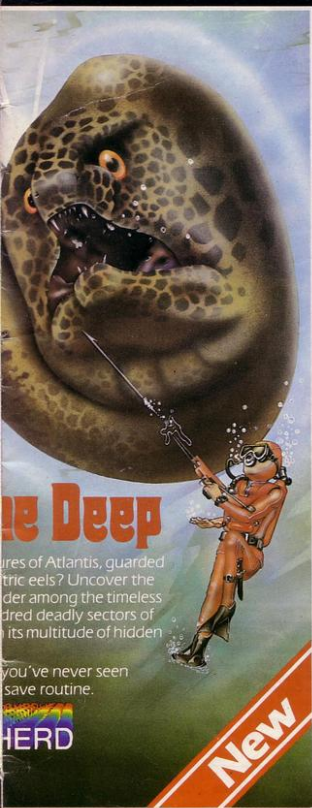
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FOR EXPRE

All programs are sold subject to the condition that they may not, by way of trade or otherwise, be lent, re



# TO IMAGINATION"

TH, JOHN MENZIES, BOOTS\*  
COMPUTER STORES

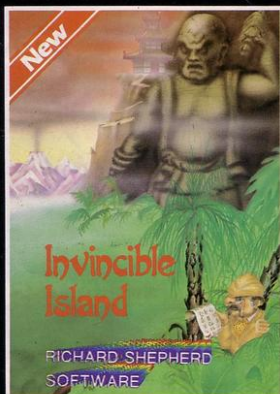


ures of Atlantis, guarded  
trick eels? Uncover the  
der among the timeless  
dred deadly sectors of  
its multitude of hidden

you've never seen  
save routine.

HERD

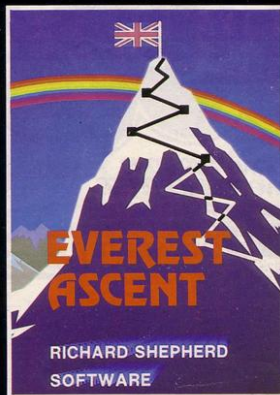
New



## Invincible Island by Peter Cooke

Exhaust your ingenuity in the quest to find The Seven Parchments of Xaro and their meaning! Will they lead you to undreamt of treasures or eternal doom? Explore the mysteries of the stockade and puzzle within the Pagoda! A spectacular split screen graphic and text adventure to braintease you for weeks!

Adventurous graphics for every location. Save routine. 48K Spectrum £6.50.



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Stake your claim to the top of the world in this strategic vertical adventure. Conquer the summit of the world's highest peak! ... struggle from base camp to base camp ... survive the elements ... watch out for avalanches, thin ice and wayward sherpas ... encounter abominable snowmen and cross bottomless crevasses!

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SP 11/83



# LETTERS

RECENTLY I bought a Spectrum and the September issue of *Sinclair Programs*. I typed-in the program **Shootout** and found that, although no error codes were produced, my cowboys refused to move when the correct keys were pressed. I then entered **Kami**. Once again I entered the program correctly and my aeroplane refused to move.

Thoroughly confused, I recorded the programs and took them to a friend who has had a Spectrum for some time. We played the recordings into her computer and both programs worked properly. Does that mean I have a faulty machine?

**Allison Fern,  
Tottenham, London.**

● Your computer is not faulty. It is one of the new model three Spectrums which have been issued since our September issue was published. Owners of model three Spectrum have experienced difficulty **LOADING** commercial software and entering program listings containing **IN** statements.

A model three Spectrum will print 191 in response to the direct command **PRINT IN** 16602, while a model one or two will respond with 255.

Owners of model three Spectrums should check all programs they **ENTER** for **IN** statements. **IN** statements are always followed by a five-digit number and then by the numbers 255, 254 or 253. In all cases 255 should be changed to 191, 254 to 190, and 253 to 189.

## SAVE MEMORY

**IN RESPONSE** to the letter from Mark Willis in the August issue, I felt that I had to tell you that the numbers take up more memory than almost anything else you could want to use in a program, so the use of **PI/PI** instead of 1 saves between four and six bytes, which is invaluable when using a 1K ZX-81. Also using **VAL "50"** saves about four to six bytes.

I am a Spectrum owner. I had a ZX-81 previously. I think the best program you have published is the **Worm**

**Game**, on which my high score is 262,400. **Protector**, **Tank Duel** and **Mapwork** are also excellent.

Since you started publishing 30 programs in each issue I have enjoyed the magazine immensely, the quality of the 16K Spectrum programs becoming extremely high. The brilliant artwork, inside and out, makes the magazine seem more friendly. Every time I look at the picture accompanying the program **Periscope** in the August issue I am nudged into fits of laughter.

To re-set RAM on the Spectrum, type-in **RANDOMIZE USR 0**. That also destroys **UDGs** and any alternative character sets you have defined.

Can anybody tell me what the report code '5 M 0:1' means? It is the response I receive when I type **RANDOMIZE USR 10**.

**P Williamson, age 14,  
Hull.**

## GOLF 81

**JUST HAVING** become the owner of a 16K ZX-81 computer I am feeling very satis-

fied with *Sinclair Programs*, which I buy as soon as it is published. There is a large selection of programs for both the 1K and the 16K ZX-81 machines which involve detailed listings and graphics. The games printed in this value-packed magazine are exciting and easy to type-in, which helps beginners a great deal in our early days of keying-in words and graphic instructions.

I have found the best game to be **Golf 81** and even though I have no experience of golf, I soon mastered the game.

I have just one complaint about this excellent magazine and that is the order in which programs are placed. I have to spend time turning all the pages to find the selected pages of programs to fit my computer. Instead could you not have the first few pages for the 1K computer then the 16K computer and then the Spectrum programs, as I am sure that would delight other buyers of the magazine?

**C Morton,  
Gedling,  
Nottingham.**

# ERRORS AND MISHAPS

**LINE 2002** of **Protector** on page 14 of the September issue contains a "E" sign. It should be replaced by a hash sign "#".

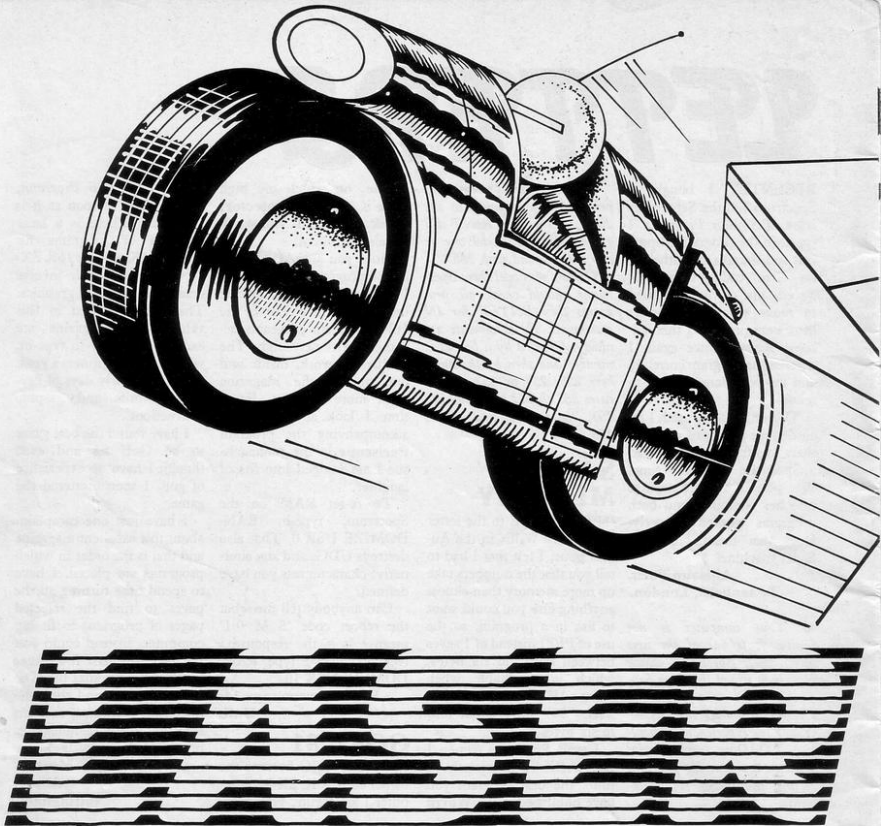
The layout of **Shootout** on page 30 proved puzzling to several people. Section one of the program—lines 30 to 9030—should be entered and **RUN**, giving the instructions and user-defined graphics. The program should then be **NEWed**, leaving the user-defined graphics in memory, and the rest of the

program entered and **RUN**.

The last character on the first printed line of both lines 80 and 100 of the program **Kami** on page 51 was not printed clearly. On line 80 it was a "c" and on line 100 it was a "d".

Many people with new Spectrums reported problems with **Shootout** and **Kami**. They were not due to faults in the program listings and are explained in the Letters section.





## Part 1

10 RESTORE : CLEAR 31999: LET  
Y=0

20 FOR N=32000 TO 32609: READ  
A: LET XXX=A: PUKE N:A: NEXT N:  
IF XXX=1860 THEN PRINT AT 10,10  
FLASH 1:"ERROR IN DATA": STOP

30 DATA 33,0,92,54,56,33,100,1  
27,54,7,35,54,207,35,54,255,35,5  
4,56,35,54,0,35,54,1,35,54,0,35,  
54,20,35,54,0,62,2,205,1,22,1,7,  
7,205,229,34,17,1,1,1,6,153,205,  
106,36,1,241,0,205,106,36,17,235  
255,1,0,153,205,106,36,1,241,0,  
205,106,36

40 DATA 42,118,92,84,93,41,41,  
25,41,41,41,25,34,118,92,124,254  
7,6,56,236,254,152,48,232,71,14,1  
2

50 DATA 197,6,9,197,62,109,144  
50,123,92,6,20,33,109,127,197,7  
9,35,79,25,229,205,217,13,62,145  
2,15,225,193,16,240,6,100,197,42  
1,106,127,43,43,43,34,106,127,17,  
1,0,205,181,3,193,16,237,193,16,  
204

60 DATA 209,6,4,197,33,0,0,6,7  
197,120,50,143,92,66,75,213,229  
205,229,34,225,6,100,197,35,229  
17,1,0,205,181,3,225,193,16,243

70 DATA 59,104,127,120,71,58,1  
95,127,129,79,237,67,106,127,197  
205,22,126,193,197,205,229,34,1

93,255,58,0,92,33,104,127,254,53  
32,7,54,0,35,54,255,24,214,254,  
56,32,7,54,0,35,54,1,24,203

80 DATA 254,54,32,7,54,255,35,  
54,0,24,192,254,55,32,5,54,1,35,  
54,0,24,181

90 DATA 205,170,34,71,126,4,7,  
16,253,203,71,40,22,193,193,33,0  
0,126,211,254,70,16,254,35,124,  
254,23,32,244,33,80,39,217,201

100 DATA 58,0,92,33,103,127,70,  
194,40,5,119,43,54,255,35,43,62,  
88,6,19,211,254,47,60,211,254,19  
7,70,167,254,193,16,343,53,62,16,  
215,62,5,215,1,5,24,205,217,13,3

3,100,127,30,32,205,40,26,237,91  
100,127,99,106,43,124,254,255,3  
2,8,193,193,1,0,0,217,24,162,92,  
85,237,83,100,127,62,16,215,62,7  
215

110 DATA 33,108,127,52,126,254,  
19,56,2,54,255,35,135,133,111,12  
6,254,255,202,70,127,229,229,70,  
35,70,205,217,13,62,32,215,33,10

6,127,126,35,70,22,255,20,214,0,  
48,251,62,33,146,79,62,175,144,2  
2,255,20,214,0,48,251,62,24,146,  
71,225,197,126,184,48,3,60,24,1,  
61,119

120 DATA 71,35,126,185,48,3,60,  
24,1,61,119,79,197,205,217,13,19  
3,225,17,143,92,124,194,32,14,12  
5,185,32,10,225,62,6,10,62,147,2  
15,195,35,126,33,33,91,17,32,0,1  
51,237,62,16,251,63,43,16,253,62  
2,190,40,12,225,33,143,92,54,7,  
62,145,215,54,2,201

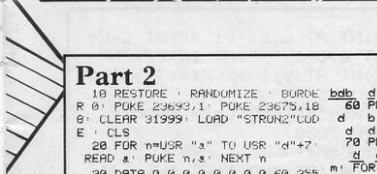
130 DATA 225,6,9,197,62,107,120  
50,123,92,229,70,35,70,205,217,  
13,62,144,215,33,0,0,126,211,254  
35,124,254,9,32,247,225,193,16,  
229,54,255,33,143,92,54,2,33,109  
127,126,254,255,192,35,39,120,2  
54,149,32,245,225,225,1,1,0,217,  
135,52,126

140 PRINT AT 10,0:"NO ERRORS IN  
DATA"

150 PRINT AT 12,3:"NOW SAVING D  
ATA TO CASSETTE"

160 SAVE "STRON2"CODE 32000,620  
170 STOP  
9999 SAVE "STRON DATA" LINE 0: B  
EEP 1:1





```

10 RESTORE ; RANDOMIZE ; BORDE
R 0 ; PUKE 23693,1 ; PUKE 23675,18
0 ; CLEAR 31999 ; LOAD "STRONG"COD
E ; CLS
20 FOR n=USR "a" TO USR "d"+7:
READ a ; PUKE n,a ; NEXT n
30 DATA 0,0,0,0,0,0,0,0,0,0,255
,153,255,195,195,195,231,0,0,0,0
,0,0,0,0,0,0,255,153,255,60,60,60
,126

```

```

40 PRINT AT 1,13; INK 6;"PROGR
AM"; FOR m=1 TO 5: FOR n=7 TO 1
STEP -1: INK n: PRINT AT 3,2;" d
bd dbdb dbba dbb d d d
d b d d d d bd b"
50 PRINT AT 5,2;"b d b
b b db d bdb b d

```

```

      b b b b b b b b
60 PRINT AT 7.2;"      d d d d d d d d
      d d b b d d d b b b d d
      d d b b d b"
70 PRINT AT 9.2;" b b b b d b b b
      d d b b b b b b NEXT N
M: 100 FOR N=0 TO 100: FOR M=0 TO 7: P
      AUSE 5: PRINT AT 13.7; INK N;"BY
      Roger Allen 1983"; NEXT N: NEXT
      T M
      80 PLOT 0.15: DRAW INK 2:255.0
      INK 5: FOR M=255 TO 24 STEP -1
      PLOT N.16: PRAUSE 2: DRAW 0.4
      NEXT N
      90 FOR N=4 TO 30: FOR M=0 TO 1
      PLOT M*20.16: PRAUSE 1: DRAW 0
      N: NEXT M: NEXT N
      100 PLOT 51.16: DRAW OVER 1:0.4

```



```

FOR n=52 TO 255: PLOT n/16: DR
AW 0.39: NEXT n
110 LET e=1: LET f=0: LET a="D
" YOU WANT THE INSTRUCTIONS?"
120 IF a=1: LET a=40: LET b=1: LET c
=4: GO SUB 9000
120 PRASE 4e: IF INKEY<"0" THEN
HEN GO TO 200
130 CLS: PRINT AT 0,0: FLASH 1
J INK 2: PLOT 1: IF INKEY<"0" AT 2
,0: (16X196") AT 1,0: (196
" 196")
140 (196") FLASH 0 AT 1,0:
PAPER 1: INK 5: "M.C.P.P. REDUUTU
140 DATA "PROGRAM NAME": "STRON
", "CRIME 1": "EVADING THE M.C.P.P.",
"VERDICT 1": "GUILTY", "PUNISHMENT
", "TO PLAY THE GAMES": "ASSIGNED
GAME 1": "LASERKEY (OPPONENT
150 LET a=0: LET b=0: LET c=0: LET
R KEYS 5 TO 8", "TASK 1": "DESTRU
CRUSHERS", "RULES 1": "DODGE WALLS
AND CRUSHERS", "PRIZE 1": "FREEDOM"
150 RESTORE 140: LET f=2: LET
e=0: FOR m=3 TO 21 STEP 2: PAUSE
100: FOR l=0 TO 1: READ a: LET
a=20-20X1: LET b=2: LET c=4+3X1
LET e=0: FOR n=0 TO 9999: LET f=2:
<LET a=AND b=0>: PAUSE 20: NEXT
1: NEXT m: LET e=1: LET f=0

```

```

200 PAUSE 100; INK 1; LET a="PR
    LET u=20; LET z=1; LET a="99
    $9 ANY KEY TO PLAY!" LET d=0; L
    ET z=30; LET b=1; LET c=6; GO SUB
    9000
210 PAUSE 4+4
220 CLS; PUKE 32009; INT (2+256)
    ) PUKE 32012; 2+256KPEEK 32009;
    PUKE 32495; u=1; PUKE 32113; u= PU
    KE 32113; 2+256K+u; PUKE 32
    528; 2+4+1000 z+30; PUKE 32386; 1
    62+15 AND z+3
230 FOR n=32012 TO 32621+256*ST
    EP 2; PUKE n; INT (RND(19)+4); POK
    E n+1; INT (RND(5)+3); NEXT n
240 PRINT AT 0,0; INK 5; "ZONE="
    12";
    NO z=3+3*TIME; RND z+3; SET
    LET 1-USE 32000
250 IF 1/1 OR (1<0 AND z<3) TH
    EN LET a="PROGRAM STRON DESTROY
    ED"; LET a=-5; LET b=2; LET c=4;
    LET d=0; GO SUB 30000; GO TO 260
    -60 AND 1<0>
260 IF 1=0 AND z<3 THEN LET a
    ="ENERGY EXHAUSTED"; LET d=10; G
    O 270
270 FOR n=40 TO 0 STEP -5; SEE
    P .000,n; BEEP .000,n-10; NEXT

```

**Y**OUR NAME is Stron and you must play to oppose the evil Mad Control Plan. Move your laser bike with the cursor keys. If the crushers hit your trail they will be destroyed. If you hit your trail, the edge of the play area, or a guard, or if you run out of time before all the crushers are dead, you will be destroyed.

There are four levels to survive, each with a shorter time limit, and faster speeds than the previous level. On the fourth level the guards are invincible and you must try to survive until the time limit.

**Laserbikes** was written for the 16K Spectrum by Roger Allen of Gerrard Cross, Buckinghamshire. It is divided into two parts, the first of which controls the machine code. LOAD and RUN the first section, then LOAD the second section and RUN by entering GOTO 20.

```

PAUSE 20; RESTORE 300; LET x:=
+1; LET u:=4*(2+10 AND x)=4*(2
AND x)=4; LET t:=(200 AND x)=4*(
100 AND x)=4*(700 AND x)=3;
200 FOR n:=1 TO 6+(3 AND x)=4; R
EAD a$; LET d:=m+2+5-(5 AND x)=4;
LET s:=25+(10 AND n)=6; LET b:=2;
LET c:=6; GO SUB 9000; PAUSE 10;
NEXT n;
290 RESTORE 310; FOR n:=1 TO 10;
READ a$,b$; BEEP a$/2,b$; NEXT n; G
O TO 220
300 DATA "CONGRATULATIONS STRON
G", "YOU SURVIVED", "BUT YOU MUST B
EAT ME AGAIN", "THAT IS.", "IF YOU
WANT YOUR FREEDOM!", "HAI HAI HAI
HA HA HA", "BUT THIS TIME YOUR CR
UEL MASTER IS INVINCIBLE AND YOU C
ANNOT SURVIVE", "THE TIME LIMIT!"
310 DATA 1.75,0,25,3,1.75,2,2
5,5,25,3,1.75,6,2,7
9000 PRINT b$;AT 432-LEN a$)/2
NEXT n
9010 FOR n:=1 TO LEN a$: PRINT b$
+ INK a$(n)/2; BEEP 0.1,a$; NEXT
n; BEEP 1
9999 SAVE "STRON1" LINE 0; BEEP
1,1; SAVE "STRON2" CODE 32000,620
0; BEEP 1,1

```

# DONKEY DIAMOND

```

1 LET C=2
2 LET F=9
3 LET I=6
4 LET H=22
5 LET G=16
6 LET SC=0
7 CLS
8 PRINT AT 0,0;"(32*1sp)"
9 PRINT AT 21,0;"(32*1sp)"
10 FOR A=1 TO 20
11 PRINT AT A,0;"(1sp)";AT A,0
12 NEXT A
13 PRINT AT 4,24;"(1<1*1>)"
14 PRINT AT 17,1;"(9e:3*97:9r:
sp:9e:3*97:9r:sp:9e:3*97:9r:sp:9
e:3*97:9r:sp:9e:3*97:9r)"
15 PRINT AT 20,1;"(30*9a)"
16 PRINT AT 18,1;"(5*97:sp:5*9
7:sp:5*97:sp:5*97:sp:6*97)"
17 PRINT AT 13,4;"(9e:97:9r:sp
:9e:97:9r:sp:9e:97:9r:sp:9e:97:9
r:sp:9e:97:9r:sp:9e:97:9r)"
18 PRINT AT 14,4;"(9w:96:99:sp
:9w:96:99:sp:9w:96:99:sp:9w:96:9
9:sp:9w:96:99:sp:9w:96:99)"
19 PRINT AT 16,27;"H";AT 13,27
;"H";AT 15,27;"H";AT 14,27;"H"
20 PRINT AT 9,6;"(7*1sp)"
21 FOR A=9 TO 12
22 PRINT AT A,6;"H"
23 NEXT A
24 PRINT AT 9,20;"(5*1sp)"
25 FOR A=5 TO 8
26 PRINT AT A,21;"H"
27 NEXT A
28 PRINT AT 5,22;"(9e:5*97:9r)
";AT 6,22;"(9w:5*96:99)"
29 FOR A=5 TO 16
30 PRINT AT A,29;"H"
31 NEXT A
32 LET A$=INKEY$
33 LET C=C+(A$="8")-(A$="5")
34 LET SC=SC+1
35 PRINT AT G,C;"(1 )";AT G,C-
1;" ";AT G,C+1;" ";AT 16,27;"H"
36 PRINT AT 9,13;"(7*9a)";AT 8
,14;" "" "" "" ""
37 IF A$="6" AND C=29 AND G=4
THEN GOTO 7000
38 LET F=F+1
39 IF A$="7" AND C=27 AND G=16
THEN GOTO 87
40 IF A$="7" AND G=12 AND C=6
THEN GOTO 90
41 LET H=H-1
42 IF G=4 AND C=24 THEN PRINT
AT 4,23;" "
43 LET I=I+1
44 IF A$="1" THEN LET C=C-2
45 IF G=4 AND C=29 THEN GOTO 9
8
46 IF A$="1" THEN PRINT AT G,C
+2;" "
47 IF A$="0" THEN LET C=C+2
48 IF A$="0" THEN PRINT AT G,C
-2;" "
49 PRINT AT 8,1;"E";AT 8,1-1;"
"
50 IF I=12 THEN LET I=6
51 PRINT AT 16,H;"0 0";AT 16
,H+5;" "
52 PRINT AT 12,7;" "
53 PRINT AT 12,F;"(9t)";AT 12,
F-1;" "
54 IF F>24 THEN LET F=9
55 IF F=C AND G=12 THEN GOTO 7
7
56 IF G=8 AND C=14 OR C=16 AND
G=8 OR C=18 AND G=8 THEN GOTO 7
57 IF H=1 THEN LET H=22
59 IF C=5 AND G=8 THEN GOTO 77
60 IF C=12 AND G=16 THEN GOTO
77
61 IF C=18 AND G=16 THEN GOTO
77
62 IF A$="7" AND C=21 AND G=8

```





**C** CLIMB THE LADDERS to reach the diamond at the top. Jump the barrels on the first floor, the alien on the second floor, and the guardian and the ghosts of past adventurers on the third floor. Move left with "5", jump left with "1", move right with "8", and jump right with "0" and climb ladders with "7".

Falling down a hole or hitting anything will kill you. Once you have your score, return to the ground floor by the ladder on the right of the screen to obtain your score.

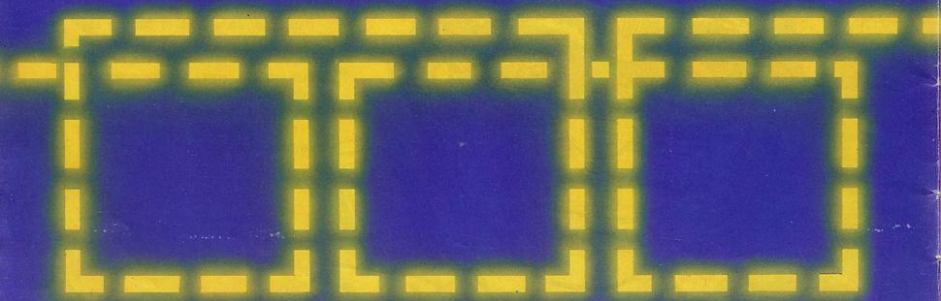
**Donkey Diamond** was written for the 16K ZX-81 by Charles Sandison of Caithness, Scotland.

```

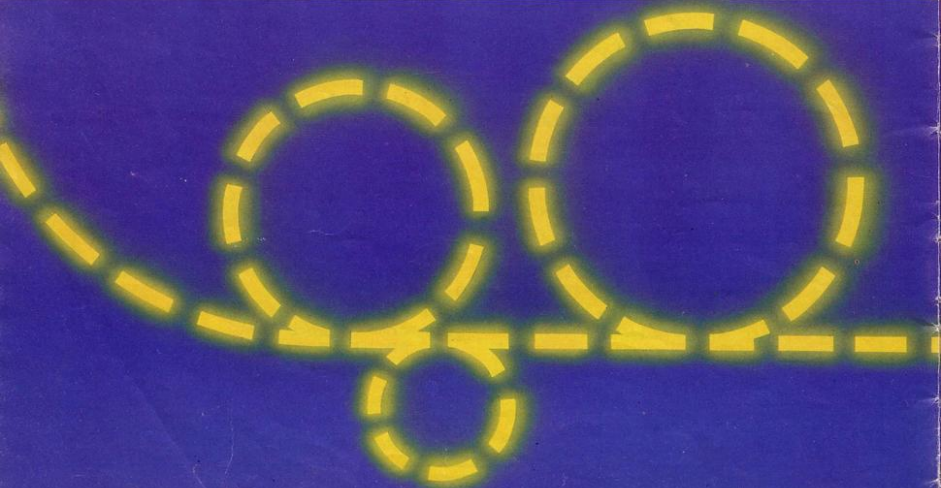
THEN GOTO 94
63 IF C=24 AND G=16 THEN GOTO
77
64 IF C=7 AND G=12 THEN GOTO 7
7
65 IF C=11 AND G=12 THEN GOTO
77
66 IF C=15 AND G=12 THEN GOTO
77
67 IF C=19 AND G=12 THEN GOTO
77
68 IF C=6 AND G=16 THEN GOTO 7
7
69 IF G=12 AND C=23 OR C=28 AN
D G=12 THEN GOTO 77
70 IF C=H+4 AND G=16 THEN GOTO
77
71 IF C=H AND G=16 THEN GOTO 7
7
72 IF C=I AND G=8 THEN GOTO 77
74 PRINT AT 12,F-2;" ";AT 8,12
;" ";AT 16,5;" ";AT 16,1;" "
75 PRINT AT 12,24;" "
76 GOTO 32
77 FOR F=G TO 19
78 PRINT AT F,C;"(1)";AT F,C;
" "
79 NEXT F
80 PRINT AT F,C;" ""

81 PRINT AT 0,0;" too bad-Press
s "" to try again "
82 PRINT AT 21,0;"          Press
"s" to stop "
83 INPUT B#
84 IF B#="S" THEN STOP
85 IF B#<>"S" THEN GOTO 1
86 STOP
87 PRINT AT 12,27;"(1)";
88 LET G=12
89 GOTO 32
90 PRINT AT 0,6;"(1)";
91 PRINT AT 12,6;"H"
92 LET G=8
93 GOTO 32
94 PRINT AT 4,21;"(1)";
95 PRINT AT 8,21;"H"
96 LET G=4
97 GOTO 32
98 PRINT AT 16,C;"(1)";AT 4,2
9;" "
101 PRINT AT 0,0;" well done\mi
sson completedd "
103 PRINT AT 21,0;" time takenL
";SC;" scoreL";100-SC;"(4kisp)
"
104 INPUT B#
105 IF B#=" " THEN GOTO 1
106 IF B#<>" " THEN STOP

```



**THE TRICKSTICK.  
A REVOLUTION THAT RUN  
AROUND ORDINARY JOY**





You know what it's like when there's someone closing in fast and your joystick won't do what your brain wants it to.

It won't let you loop or curve the way you'd like, or arc and spin at the speed you want.

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Immediately.

And because the only moving parts are the firing buttons, the new Trickstick will last far longer than old fashioned joysticks.

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Up to eight people can play simultaneously.

For the very first time, you can now play with up to seven of your mates.

With our specially written game, you can either play against the computer, against one friend, in teams of two or three or however you want.

Just by plugging in extra interfaces to each

# S RINGS STICKS.



other, up to eight of you can loop the loop and battle it out. All at the same time.

So if you thought computer games were already exciting, wait until you get your hands on a Trickstick.

Revolutionary new software.

Developed especially for use with the Sinclair ZX Spectrum and fully compatible with standard Kempston software, the Trickstick makes your existing software even more fun.

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EAST LONDON

**ROBOTICS**







# BARON

```

2 RANDOMISE
3 PRINT "LEVEL 1/2/3?"
4 INPUT J
5 LET J=3-J
6 IF J=3 THEN STOP
7 IF J<0 THEN GOTO 4
8 CLS
9 LET A=100
10 LET B=100
11 LET C=20
12 FOR I=1 TO 20
13 IF A#0 OR B#0 OR C#0 THEN GOTO 43
14 PRINT "YOU HAVE "; (21-I); " YEARS TO GO"
15 PRINT "POPULATION = "; A
16 PRINT "CORN = "; B; " BUSHELS"
17 PRINT "LAND = "; C; " ACRES"
18 PRINT "CORN TO PLANT?"
19 INPUT P
20 IF P#0 OR P#A*2 OR P#C*8 THEN GOTO 25
21 PRINT P
22 LET B=B-P
23 PRINT "CORN FOR FOOD?"
24 INPUT F
25 IF F#0 THEN GOTO 25
26 CLS
27 LET B=B-F
28 IF P/(C*3)/4 THEN LET C=(C*5)/4
29 IF P/(B*4)/4 THEN LET B=(B*3)/4
30 LET F=F/4
31 LET C=C/4
32 LET A=A/4
33 IF C#A/4 THEN GOSUB 45
34 LET A=A/2
35 LET B=B/2
36 IF Y#3 THEN LET B=B*P*J
37 IF Y#2 AND Y#6 THEN LET B=B*P*(J+2)
38 IF Y#6 THEN LET B=B*P*(J+4)
39 NEXT I
40 PRINT "WELL DONE SCORE=";B
41 RUN
42 PRINT "YOU LOST SCORE=";B
43 RUN
44 LET V=VND(3)
45 IF V#1 THEN PRINT "ASSASSINATED"
46 IF V#1 THEN RUN
47 RETURN

```

**Y**OU ARE a Baron who has total control of his country. With each move you must plant food for the next year. You cannot plant more corn than you have, or more than twice your population, or more than eight times your land acreage. You must also feed your vassals.

Each vassal needs four bushels of corn per move. If you over-feed your population it will grow quickly; if you starve more than a quarter of it to death, there is a chance that you will be assassinated. Can you survive for 20 years?

Written for the ZX-80 by W K Rose of Hawkhurst, Kent.

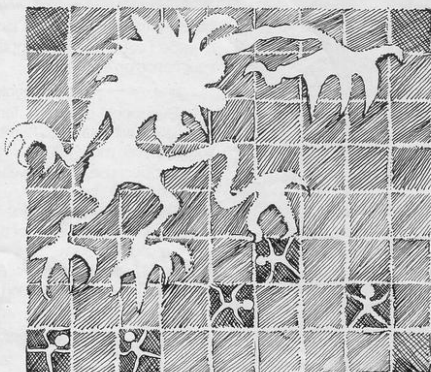
**A**TEN BY TEN grid is printed on the screen, at one point on which the invisible **Hurkle** is hiding. You have five attempts in which to find it. After each guess you will be told in which direction the hurkle is in relation to you.

Written for the ZX-80 by Mike Davies of Llandeilo, Dyfed.

```

1 LET K=0
2 LET X=VND(10)-1
3 LET Y=VND(10)-1
4 FOR F=0 TO 9
5 PRINT "9-F"; "*****"
6 NEXT F
7 PRINT CHR$(161); "012345689"
8 FOR F=1 TO 5
9 INPUT B
10 INPUT S
11 LET A=S-B
12 IF A#0 OR B#0 OR A#0 OR B#0
13 THEN GOTO 5
14 LET B=S+...
15 IF A#Y THEN LET A#="UP"
16 IF A#Y THEN LET A#="DOWN"
17 IF B#X THEN LET B#="LEFT"
18 IF B#X THEN LET B#="RIGHT"
19 PRINT "UP="; B#; "ALONG="; B#;
20 IF A#Y AND B#X THEN GOTO 28
21 LET K=2+PEEK(16395)+PEEK(163
97) *256
22 POKE K+A*12+B*170
23 POKE K+119,161-F
24 NEXT F
25 PRINT "YOU FAILED IMBE CILE
..HR..HR..HR"
26 PRINT "I WAS AT UP=";9-Y; "
ALONG=";X
27 GO TO 28
28 PRINT "ARRRH, YA GOT ME..."
29 PRINT "AGRIIN?"
30 INPUT AS
31 IF AS#A#="Y" THEN NOT AS#="N
32 THEN GO TO 30
33 IF AS#="N" THEN STOP
34 CLS
35 RUN

```



# HURKLE

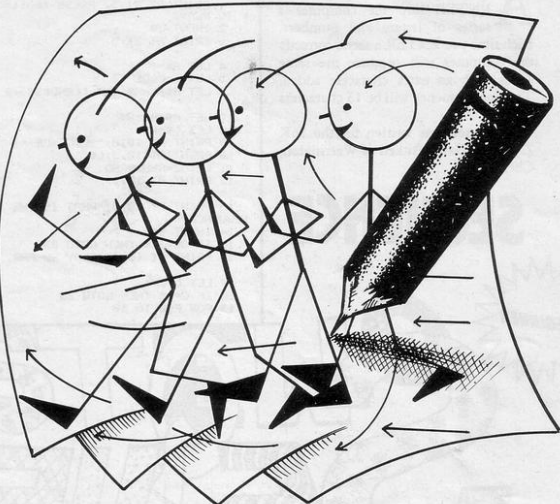
**A**NIMATION was published as 3D was in our September issue, to suggest new ways of using Spectrum graphics. Jonathon Healey of Winchester, Hampshire has produced a man who walks from the right to the left of the screen. The movement is smooth and resembles that of an animated cartoon.

We would be interested in seeing programs which develop the technique further (16K Spectrum).

```

10 FOR F=0 TO 11
20 FOR W=0 TO 7
30 READ A: POKE USR CHR$(144+
F*4+W)
40 NEXT W: NEXT F
60 DATA 0,0,0,0,0,0,0,2,1,0,
0,0,0,0,3,0,0,0,0,0,112,112,32,1
20,164,36,96,0,0,208,156,132
80 DATA 0,0,0,0,1,1,0,0,0,0,3,
0,0,0,0,3,0,0,0,0,192,192,128,19
2,224,208,224,192,192,192,192,19
2
100 DATA 0,0,0,0,0,0,0,32,72,62,
9,9,56,68,66,192,7,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0
110 LET A$="abcd"
120 LET B$="efgh"
130 LET C$="ijkl"
140 FOR S=0 TO 0 STEP -1
150 FOR F=0 TO 2
155 READ A$
160 PRINT AT 10,3: A$ TO 2: AT
11,3: A$(2 TO 3)
170 PAUSE 8
180 NEXT F
190 RESTORE 155
195 NEXT S
200 DATA A$,B$,C$
210 CLS: GO TO 140

```



# ANIMATION



# MIRROR PATTERNS

```

15 BORDER 0: PAPER 0: INK 6: C
LS
20 FOR I=1 TO 160 STEP 7.55
30 PLOT 0,(160-I): DRAW I,-(16
0-I)
40 PLOT 0,I: DRAW I,-I+160
50 NEXT I
60 FOR I=1.6 TO 4.7 STEP .1
70 INK 7: PLOT 127.96: DRAW 10
80 CLS: I,50: SIN I
80 NEXT I: INK 5
9990 FOR J=0 TO 175: FOR I=0 TO
127
9991 IF POINT (I,J)=1 THEN PLOT
255-I,J
9992 NEXT I: NEXT J
9993 LET L=22528: LET G=22544
9994 FOR J=1 TO 22
9995 FOR I=15 TO 0 STEP -1
9996 POKE G+(15-I),PEEK (L+I)
9997 NEXT I
9998 LET L=L+32: LET G=G+32
9999 NEXT J

```

**M**IRROR PATTERNS, written for the Spectrum by Graham Walkden of Banchory, Kincardineshire, will copy the contents of the left-hand side of the screen to the right-hand side. Colours as well as patterns are copied. The program also contains a colourful demonstration.

**A**TTEMPT to remember and ENTER into the computer a series of letters and numbers. Each time you ENTER a series correctly the computer will produce the same series with an extra character added. The final sequence will be 15 characters long.

Sequence was written for the 16K ZX-81 by Gavin Aitken of Warrington, Cheshire.

## SEQUENCE

BEGINNER



```

1 PRINT AT 21,5;"PRESS newlin
2 TO PLAY"
2 INPUT Z#
3 PRINT AT 21,5;"
4 LET A$=""
5 LET C=CODE ""
6 LET B$=CHR$(INT ((RND*36)+2
7 LET A$=A$+B$
8 LET C=A$
9 PRINT AT 10,0;"SEQUENCE."
10 PRINT AT 10,9;C#
11 LET Z=RND*36
12 PRINT AT 10,9;"
13 PRINT AT 20,0;"WHAT IS THE
SEQUENCE?"
14 INPUT S#
15 IF S#<>C# THEN GOTO 23
16 PRINT AT 16,4;"OKAY SO FAR."
17 LET C=C+1
18 IF C=15 THEN GOTO 28
19 FOR F=0 TO 50
20 NEXT F
21 CLS
22 GOTO 6
23 CLS
24 PRINT AT 6,4;"SORRY, THAT I
S WRONG"
25 PRINT AT 10,0;"SEQUENCE IS
"
26 PRINT AT 16,4;"YOU SCORED "
27 GOTO 32
28 CLS
29 PRINT AT 10,10;"FANTASTIC..
"
30 PRINT AT 12,4;"YOU HAVE A G
REAT MEMORY."
31 PRINT AT 14,4;"YOU SCORED 1
5 OUT OF 15."
32 PRINT AT 21,6;"ANOTHER GUY
(Y/N)"
33 IF INKEY$="Y" THEN RUN
34 IF INKEY$<>"N" THEN GOTO 33
35 STOP
36 SAVE "MEMORY GAME"
38 RUN
  
```

## AIR-SEA LANDER

**L**AND YOUR helicopter on the moving ship using the usual cursor keys. You must line up the X on your helicopter with the X on the ship and land before your fuel is exhausted.

Air-sea Lander was written for the 1K ZX-81 by Michael McRoberts of New Brighton.



BEGINNER

```

10 LET L=VAL "5"
20 LET C=VAL "25"
30 LET A$=""
40 FOR T=VAL "0" TO VAL "60"
50 CLS
55 LET D=INT (RND*4)+6
60 PRINT AT 10,5;"-----
---"
70 IF A$="" THEN PRINT AT 10,0
;"(9*13*15*17*19*21*23*25*27*29*31*33*35*37*39*41*43*45*47*49*51*53*55*57*59)"
80 IF L=VAL "17" AND C=D+3 THE
N LET A$="0"
  
```

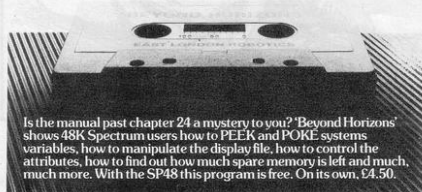
```

95 IF L=VAL "18" THEN GOTO 300
100 IF A$="0" AND L=VAL "17" TH
EN GOTO 500
120 LET C=C+(INKEY$="B")-(INKEY
$="5")
130 LET L=L+(INKEY$="6")-(INKEY
$="7")
140 NEXT T
200 PRINT "OUT OF FUEL"
200~PRINT "OUT OF FUEL"
300 PRINT "CRASH"
310 STOP
500 PRINT "LANDED ";T
  
```



# Extend your 16k Spectrum to 48k for just £23.00.

## And get a Free program worth £4.50 into the bargain.



Is the manual past chapter 24 a mystery to you? 'Beyond Horizons' shows 48K Spectrum users how to PEEK and POKE systems variables, how to manipulate the display file, how to control the attributes, how to find out how much spare memory is left and much, much more. With the SP48 this program is free. On its own, £4.50.

### **SP48, 32K Memory Extension with Program — £23.00**

Now, our SP48 offers even better value. Because now, we're not only offering you the facility to up-grade your 16K Spectrum to 48K, we're also offering you the opportunity to be able to utilise this vastly extended memory quickly and easily.

For £23 all you need to do is plug the chip-set into the sockets provided by Sinclair on your issue 2 (or £35 for issue 1) and you have a standard 48K Spectrum fully compatible with all Sinclair add-ons and very low in power consumption.

There is no soldering required.  
Fitting and removal are easy.  
And the SP48 carries our full warranty and is upgradable, on a part exchange basis, to SP80.

Then all you need to do is LOAD our specially written 48K guide program, 'Beyond Horizons', and your 48K computer will guide you through its memory.

With no need to labour through manuals.  
This will save you time, because we all know how easy it is to get lost with memory maps.

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Yet it is of tremendous benefit to the serious user. And an SP80 FORTH compiler will be available in late September.

For a fit and test service at our premises £3, and by registered post £7.  
But this is not recommended for the complete beginner.

Yet it is of tremendous benefit to the serious user. And an SP80 FORTH compiler will be available in late September.

For a fit and test service at our premises £3, and by registered post £7.

**MAXIMEM ZX81. 32K — £39 (PLUS ONE USED 1K ZX81) 64K — £59 (PLUS ONE USED 1K ZX81)**

The MAXIMEM 32 and 64K is a modified ZX81 and not just a RAM pack. It fits inside the case.

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The extra memory uses only a quarter of the power consumption of a

16K plug-in memory, and does not interfere with any standard add-ons, such as printers RS232 or other interfaces.

### **ZX Slowloader — £10**

The ZX Slowloader is a software masterpiece that will help you to LOAD ZX81 programs onto a Spectrum, saving hours of typing time.

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All products on this order form are in stock at the time of going to press. Same day dispatch for phoned Access and Visa orders.

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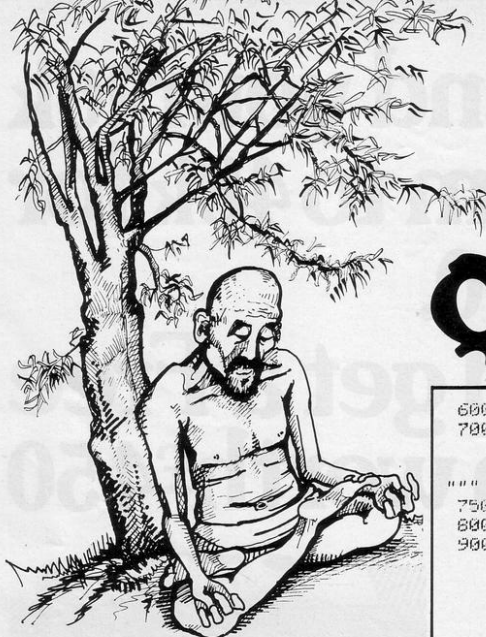
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**EAST LONDON  
ROBOTICS**

SP 11/83



IAIN MILLAR of Newcastle-on-Tyne wrote **Quest** for 16K ZX-81 owners wishing to trick gullible friends. You may move in any of the six mystical directions to find the meaning of life and perfect happiness. Millar says that the record so far is 23 minutes.

# QUEST

```
> 100 REM THE QUEST FOR THE
"MEANING OF LIFE"
BY IAIN DAVID MILLAR
```

```
101 REM
150 PRINT " the quest for th
e meaning of life
!"
```

```
160 PRINT
200 PRINT " AFTER BECOMING DIS-
ILLUSIONED WITH THE
SUPERFICIALITIES OF
OF THE MATERIAL WOR
YOU HAVE SET OFF IN
4-DIMENSIONAL SPAC
TO FIND THE ""MEAN
ING OF LIFE""."
```

```
300 PAUSE 500
400 CLS
500 PRINT " YOU MAY TRAVEL IN
ANY OF THE SIX
MYSTIC DIRECTIONS
GIVEN TO YOU BY
THE WISENED SAGE
BEFORE YOU DEPAR-
TED- NAMELY:
```

```
UP
DOWN
BACK
FORTH
IN
OUT"
```

```
600 PRINT
700 PRINT " IF YOU THINK THAT
YOU HAVE REACHED
YOUR GOAL, TYPE ""*
"""
```

```
750 PAUSE 500
800 CLS
900 PRINT " IN WHICH MYSTIC DI-
RECTION DO YOU WISH
TO BEGIN YOUR JOUR-
NEY, O SEEKER OF
ENLIGHTENMENT ?"
```

```
910 INPUT A$
920 PAUSE 175
930 CLS
940 IF A$="*" THEN GOTO 1500
950 IF A$="UP" OR A$="DOWN" OR
A$="BACK" OR A$="FORTH" OR A$="I
N" OR A$="OUT" THEN GOTO 910
```

```
960 PRINT
970 PRINT " THE QUEST SHOULD NO
BE UNDERTAKEN BY
THOSE STILL CAUGHT
IN THE TRAPPINGS OF
THE MATERIAL WORLD.
PLEASE CONFINE YOUR
SELF TO THE MYSTIC
DIRECTIONS IN ORDER
TO REACH ENLIGHTEN-
MENT."
```

```
980 PRINT
990 PAUSE 500
1000 GOTO 910
1500 PRINT
1600 PRINT "
"
1700 PRINT " YOU HAVE REACHED EN
LIGHTENMENT "
1800 PRINT " NIRVANA AWAITS Y
OU
"
1900 PRINT "
"
2000 STOP
```



**Y**OUR AIM is to succeed in completing the fifth level of **Quasimodo** and thus to reach Esmerelda. On the first three levels you must jump the barrels and the holes to ring the bell. On the fourth level, swing down the rope, jump the barrels and ring the bell. On the fifth level jump the barrels and climb the ropes until you meet Esmerelda. The faster you complete each level the more points you will score.

Written for the 16K Spectrum by Ian Maddock of Stockport, Cheshire.

# QUASIMODO



```

5 GO SUB 9000
6 LET ha=0
10 GO SUB 5000
20 IF 1=1 THEN GO TO 1000
21 IF 1=2 THEN GO TO 2000
22 IF 1=3 THEN GO TO 3000
23 IF 1=4 THEN GO TO 4000
24 IF 1=5 THEN GO TO 5000
1000 BORDER 5: PAPER 5: INK 0: C
LS: PRINT AT 1,29;30;AT 2,29;30
AT 3,29;30
1010 PLOT 243,156: DRAW 0,-44
1015 FOR z=9 TO 11: PRINT AT z,0
: INK 4:"(4X1SP:SP:5X1SP:SP:5X1S
P:SP:5X1SP:SP:5X1SP:SP:3X1SP)";
NEXT z
1020 FOR z=11 TO 21: PRINT AT z,
0: INK 4:"(32X1SP)"; NEXT z
1030 PRINT AT a,b;1;" "
1040 PRINT AT 0,0;"SCORE " :sc
1050 PRINT AT 0,12;"HI-SCORE " :h
s
1052 PRINT AT 21,0: PAPER 4:"LIV
ES " :lives
1053 PRINT AT 4,0;"LEVEL " :l
1055 BEEP .1,10
1060 FOR c=30 TO 0 STEP -1
1061 LET bo=bo-10: PRINT AT 2,0;
"BONUS " :bo
1063 PRINT AT 0,6;sc
1064 PRINT AT a,b;1;" "
1065 PRINT AT a,b;"f"
1070 PRINT AT 0,c: INK 3;"g"
1071 IF b>30 THEN GO TO 9550
1072 PRINT AT 0,0;" " :PRINT AT
7,0; INK 5: PAPER 5;" "
1080 LET b=b+(INKEY$="p" AND b<3
0)-(INKEY$="z" AND b>1)
1090 IF INKEY$="1" THEN LET a=a+7
LET b=b+2: PRINT AT a,b;"f":AT
a+1,b-2;" " :LET a=a: PRINT AT a
,b;" "
1095 IF c=b-2 THEN BEEP .05,20
LET sc=sc+10
1100 PRINT AT a,b-1;" " :PRINT AT
T,0;c+1;" "
1101 PRINT AT a-1,b;" "
1105 IF a=7 THEN PRINT AT a+1,b;
" "
1109 IF 1=3 THEN GO SUB 6900
1110 IF b=c THEN GO SUB 1300
1111 IF b=4 AND a=3 THEN GO TO 7
300
1112 IF a=8 AND b=10 THEN GO TO
7200
1113 IF a=8 AND b=16 THEN GO TO
7200
1114 IF a=8 AND b=22 THEN GO TO
7200

```



```

1115 IF a=8 AND b=28 THEN GO TO
7200
1116 IF 1=2 AND a=8 AND b=7 THEN
GO TO 7200
1117 IF 1=2 AND a=8 AND b=13 THE
N GO TO 7200
1118 IF 1=2 AND a=8 AND b=19 THE
N GO TO 7200
1119 IF 1=2 AND a=8 AND b=25 THE
N GO TO 7200
1120 NEXT c
1130 GO TO 1055
1950 RETURN
1960 IF ATTR (a,b)=43 THEN GO TO
7000
1990 RETURN
2000 PRINT AT 0,0;" "
:29;a;AT 2,29;b;AT 3,29;c; PL
OT 243,156: DRAW 0,-44
2020 FOR z=9 TO 11: PRINT AT z,0
: INK 4:"(4X1SP:SP:2X1SP:SP:2X1S
P:SP:2X1SP:SP:2X1SP:SP:2X1SP:SP
:2X1SP:SP:2X1SP:SP:2X1SP:SP:2X1
SP)"; NEXT z: FOR z=11 TO 21: PRIN
T AT z,0: INK 4:"(32X1SP)"; NEXT z
2030 PRINT AT a,b;"f"
2040 PRINT AT 0,0;"SCORE " :sc
2050 PRINT AT 0,12;"HI-SCORE " :h
s
2052 PRINT AT 21,0: PAPER 4:"LIV
ES " :lives
2053 PRINT AT 4,0;"LEVEL " :l
2055 GO TO 1055
2060 PRINT AT 0,0;" "
:JAT 1,29;a;
AT 2,29;b;AT 3,29;c; PLOT 243,
156: DRAW 0,-44: FOR z=9 TO 11:
PRINT AT z,0: INK 4:"(4X1SP:SP:2
X1SP:SP:2X1SP:SP:2X1SP:SP:2X1SP:
SP:2X1SP:SP:2X1SP:SP:2X1SP:SP:2X
1SP:SP:2X1SP)"; NEXT z: FOR z=11
TO 21: PRINT AT z,0: INK 4:"(32
X1SP)"; NEXT z
3010 PRINT AT 0,0;"SCORE " :sc;AT
0,12;"HI-SCORE " :hs;AT 4,0;"LEV
EL " :l;AT 21,0: PAPER 4:"LIVES "
:lives
3020 FOR g=4 TO 30 STEP 3: PRINT
AT 10,g;"AT 9,g;" :f"; NEXT g
3030 PRINT AT a,b;"f"
3040 GO TO 1055
4000 CLS : PRINT AT 1,29;a;AT 2
,29;b;AT 3,29;c;AT 1,24;b;AT
2,24;b;AT 3,24;c; PLOT 243,156
: DRAW 0,-44: PLOT 203,156
4005 PRINT AT 1,0;a;AT 2,0;b;A
T 3,0;c
4010 FOR z=9 TO 14: PRINT AT z,0
: INK 4:"(9X1SP:17X1SP:6X1SP)"; N
EXT z
4020 FOR z=14 TO 21: PRINT AT z,
0: INK 4:"(32X1SP)"; NEXT z
4030 PLOT 203,156: DRAW 0,-88
4040 PLOT 76,156: DRAW 0,-88
4050 PRINT AT 0,0;"SCORE " :sc;AT
0,12;"HI-SCORE " :hs;AT 4,0;"LEV
EL " :l;AT 21,0: PAPER 4:"LIVES "
:lives
4060 PRINT AT a,b;"f" : BEEP .1,1
0: FOR c=24 TO 9 STEP -1
4065 PAPER 4
4070 LET bo=bo-10: PRINT AT 21,1
2;"BONUS " :bo
4075 PAPER 5
4080 PRINT AT a,b;"f":AT a,b+1;"
" :AT a,b-1;" " :AT 13,c: INK 3;"g"
4090 LET b=b+(INKEY$="p" AND b<3
0)-(INKEY$="z" AND b>1)
4100 IF a=8 THEN IF INKEY$="1" T
HEN LET a=a+7: LET b=b+2: PRINT AT
0,b-2;" " :AT a,b;"f": FOR v=1 T
O 20: NEXT v: LET a=a: PRINT AT
7,b;" " :AT a,b;"f"
4105 IF a=13 THEN IF INKEY$="1"
THEN LET a=a+12: LET b=b+2: PRINT
AT 13,b-2;" " :AT a,b;"f": FOR v=
1 TO 20: NEXT v: LET a=a+13: PRINT
AT 12,b;" " :AT a,b;"f"
4110 IF ATTR (a,b-1)=43 THEN BEE
P .1,10: LET sc=sc+10: PRINT AT
0,6;sc

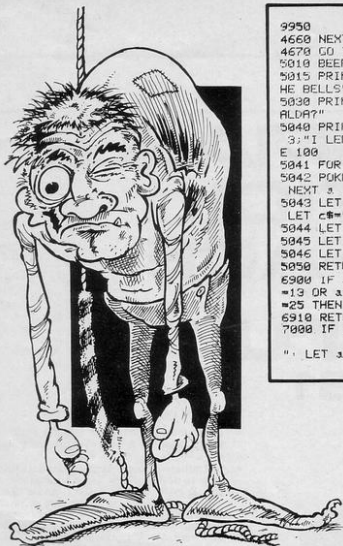
```

```

4120 IF ATTR (a,b)=43 THEN GO TO
7000
4130 IF b=30 THEN LET a=a+13: LET b
=b+1: PLOT 76,156: DRAW 0,-88: P
RINT AT 9,0;" "
4140 IF b=25 THEN LET a=a+9: LET b
=b+1: PRINT AT a,b;"f":AT 13,24;"
" : PLOT 203,156: DRAW 0,-88
4150 IF b=30 THEN PRINT AT a,b-1;"
" :AT a,b;"f" : GO TO 9950
4155 PLOT 203,156: DRAW 0,-88
4160 NEXT c: PRINT AT 13,9;" "
GO TO 4060
4500 CLS : FOR g=4 TO 20 STEP 4:
PRINT AT 0,g;"EEEEEEEEEEEEEEEEEE
EEEEEEEEEEEEEEEEEE" : OVER 1:AT 9,0:
" " : OVER 0: NEXT g
4510 PLOT 243,24: DRAW 0,16
4520 PLOT 12,56: DRAW 0,16
4530 PLOT 243,88: DRAW 0,16
4540 PLOT 12,120: DRAW 0,16
4550 PLOT 234,144: DRAW 0,20: DR
AW 20,0: DRAW 0,-20: DRAW -20,0
4560 PRINT AT 2,0;"f"
4565 LET a=a-19: LET b=b-1
4570 BEEP .1,10: FOR c=30 TO 0 S
TEP -1: PRINT AT 0,0;"SCORE " :sc
:AT 0,12;"HI-SCORE " :hs;AT 2,0;"
LEVEL " :l;AT 2,12;"LIVES " :lives
4580 PRINT AT a,b;"f":AT a,b+1;"
" :AT a,b-1;" "
4590 LET bo=bo-10: PRINT AT 21,0
;"BONUS " :bo
4595 PLOT 234,144: DRAW 0,20: DR
AW 20,0: DRAW 0,-20: DRAW -20,0
4599 FOR g=3 TO 19 STEP 4: PRINT
AT 9,g: INK 3;"g":AT 9,c+1;" " :
AT 0,0;" " : NEXT g
4600 LET b=b+(INKEY$="p" AND b<3
0)-(INKEY$="z" AND b>1)
4610 IF INKEY$="1" THEN LET a=a+3
1: LET b=b+2: PRINT AT a+1,b-2;"
" :AT a,b;"f": FOR a=1 TO 20: NE
XT a: LET a=a+1: PRINT AT a-1,b;
" " :AT a,b;"f"
4620 IF ATTR (a,b)=43 THEN GO TO
7000
4630 IF c=b-1 OR c=b-2 THEN BEEP
.1,20: LET sc=sc+10: PRINT AT 0
,6;sc
4640 IF a=19 AND b=30 THEN LET a
=a-15: PRINT AT 19,29;" "
4650 IF a=15 AND b=1 THEN LET a=a
+11: PRINT AT 15,2;" "
4653 IF a=11 AND b=30 THEN LET a
=a+7: PRINT AT 11,29;" "
4656 IF a=7 AND b=1 THEN LET a=a
+3: PRINT AT 7,2;" "
4659 IF a=3 AND b=30 THEN GO TO

```





```

9950
4660 NEXT c
4670 GO TO 4570
5010 BEEP 1,20: BEEP 1,17
5015 PRINT "'''' CAN YOU RING T
HE BELLS"
5030 PRINT "'''' AND SAVE ESMAR
ALDAY"
5040 PRINT "TAB 3:"P RIGHT"TAB
3:"I LEFT"TAB 3:"1 JUMP:"PAUS
E 100
5041 FOR a=0 TO 704
5042 POKE 23692,255: PRINT " "
NEXT a
5043 LET a$="abc": LET b$=" "
LET c$=" "
5044 LET i=1: LET lives=3
5045 LET sc=0: LET a=8
5046 LET b=1: LET bo=5000
5050 RETURN
6900 IF a=8 AND b=7 OR a=0 AND b
=13 OR a=8 AND b=19 OR a=8 AND b
=25 THEN GO TO 7200
6910 RETURN
7000 IF i<>5 THEN PRINT AT 8,0:"
" LET a=8: LET b=0: LET lives=1

```

```

lives=1: IF lives<1 THEN GO TO 71
00
7005 IF i=5 THEN LET lives=lives
+1: IF lives=1 THEN GO TO 7100
7010 BEEP .3,-20: BEEP .3,-21: B
EEP .3,-22: GO TO 20
7100 FOR g=1 TO 10: BEEP .3,-30
BEEP .3,-31: BEEP .3,-32: NEXT
g: CLS
7105 PRINT AT 10,7:"YOU SCORED "
:sc:AT 14,7:"HI-SCORE " :hs:AT
16,7:"YOU GOT TO LEVEL " :l:AT 21
,2:"PRESS ANY KEY TO PLAY AGAIN"
7110 IF hs<sc THEN LET hs=sc: PR
INT AT 14,7:"HI-SCORE " :hs
7120 PAUSE 0: CLS: GO TO 10
7200 PRINT AT a+2,b: FLASH 1:"f"
:AT a,b:" " GO TO 7000
9000 CLS: FOR a=USR "a" TO USR
"9"+7
9010 READ user: DEEP .01,0: POKE
a,user
9020 NEXT a: RETURN
9030 DATA 0,0,0,1,3,7,15,15
9040 DATA 0,24,64+32+16+8+4+2,25
5,255,255,255,255
9050 DATA 0,0,0,128,128+64,128+6
4+32,128+64+32+16,128+64+32+16
9060 DATA 15,31,63,255,0,0,0,0
9070 DATA 8,1111000,255,0,0,0,0
9080 DATA 60,60,24,255,60,60,0
100100,BIN 01000010,0
9090 DATA 0,60,126,255,255,126,6
0,0
9950 PRINT AT 10,5: FLASH 1:"YOU
HAVE A BONUS OF":bo: FOR g=1 T
O 15: BEEP .1,10: BEEP .1,5: NEX
T g: LET i=1+1: LET sc=sc+bo: LE
T bo=5000: LET a=8: LET b=1: LET
c=0: IF i=6 THEN GO TO 9960
9955 GO TO 20
9960 CLS: PRINT AT 0,6: FLASH 1
:"YOU SAVED ESMARELDA": FOR w=0
TO 10: FOR a=20 TO 35: BEEP .005
,a: NEXT a: NEXT w
9970 LET i=5: GO TO 7105

```

# SHARP

```

10 LET Z=100
20 FOR D=1 TO 10
30 PRINT "(sp:9f'9h)":
40 NEXT B
50 FOR B=0 TO 28
60 PRINT AT 6,B:" ">="
70 IF INKEY<>" " THEN GOTO 110
80 NEXT B
90 LET Z=Z-5
100 GOTO 150
110 FOR D=5 TO 0 STEP -1
120 PRINT AT 0,B+1:"=" :AT D,B+1
:" "
130 NEXT D
140 LET Z=Z-2
150 PRINT AT 6,B:" "
160 FOR B=0 TO 29
170 PRINT AT 0,B:
180 IF PEEK (PEEK 16390+256*PEE
K 16390)<0 THEN GOTO 50
190 NEXT B
195 PRINT AT 0,0:"SCORE " :Z:
200 PRINT AT 10,1:"GAME OVER PL
AY AGAIN? PRESS ANY KEY"
210 PAUSE 40000
220 CLS
230 RUN

```



# SHOOTER

**S**HOOT all the boxes, without missing any or going off the screen. If you miss a box, two points will be deducted from your score and if you go off-screen five points will be deducted. The maximum score is 100.

**Sharp Shooter** was written for the 1K ZX-81 by Colin Baxter of Crawley, Sussex.

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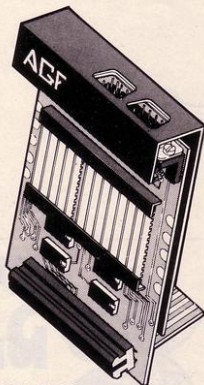
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**C**ONSTELLATIONS is an educational program for the 16K ZX-81. It will display any one of

six constellations on the screen and could be modified to include many more. It was written by Zoe O'Sullivan

of north London. All asterisks in the program should be entered in the inverse mode.

```

10 PRINT "SOME STAR MAPS"
20 PRINT
30 PRINT "1=THE PLOUGH"
31 PRINT "2=CASSIOPEIA"
32 PRINT "3=URSA MINOR"
33 PRINT "4=CEPHEUS"
34 PRINT "5=BOOTES"
35 PRINT "6=LEO"
40 INPUT A
45 PAUSE 150
46 CLS
50 IF A=1 THEN GOTO 60
51 IF A=2 THEN GOTO 100
52 IF A=3 THEN GOTO 140
53 IF A=4 THEN GOTO 180
54 IF A=5 THEN GOTO 220
55 IF A=6 THEN GOTO 260
60 GOSUB 1000
70 PRINT AT 13,6;"*";AT 10,10;
"*";AT 10,13;"*";AT 10,18;"*";AT
13,21;"*";AT 10,28;"*";AT 6,28;
"*"
80 PRINT TAB 1;"THE PLOUGH"
90 STOP
100 GOSUB 1000
110 PRINT AT 4,10;"*";AT 8,11;"
*";AT 9,14;"*";AT 13,15;"*";AT 1
2,19;"*"
120 PRINT TAB 1;"CASSIOPEIA"
130 STOP
140 GOSUB 1000
150 PRINT AT 15,9;"*";AT 15,12;
"*";AT 11,12;"*";AT 10,10;"*";AT
7,15;"*";AT 5,17;"*";AT 4,20;"*
"
160 PRINT TAB 1;"URSA MINOR"
170 STOP
180 GOSUB 1000
190 PRINT AT 2,8;"*";AT 12,14;"
*";AT 4,17;"*";AT 8,22;"*";AT 11
,21;"*";AT 14,20;"*";AT 15,20;"*
";AT 15,19;"*"
200 PRINT TAB 1;"CEPHEUS"
210 STOP
220 GOSUB 1000
230 PRINT AT 3,10;"*";AT 4,14;"
*";AT 13,12;"*";AT 9,6;"*";AT 19
15;"*";AT 3,19;"*";AT 13,23;"*"
240 PRINT TAB 1;"BOOTES"
250 STOP
260 GOSUB 1000
270 PRINT AT 12,6;"*";AT 11,10;
"*";AT 7,10;"*";AT 13,20;"*";AT
16,16;"*";AT 15,23;"*";AT 10,20;
"*";AT 8,17;"*";AT 5,17;"*";AT 2
,21;"*";AT 4,2;"*"
280 PRINT TAB 1;"LEO"
290 STOP
3000 FOR N=1 TO 22
3005 FAST
3010 PRINT "(32*isp)"
3020 NEXT N
3025 SLOW
3030 RETURN

```

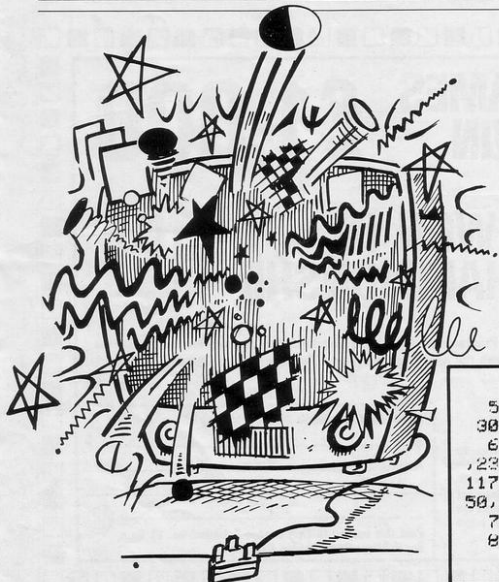
# COLOURING

COLOURING, by Michael Matan of Southport, Merseyside shades objects drawn on the Spectrum. Line 100 has been included to show how much clearer a circle shaded by this method is than a circle shaded by drawing several circles, one inside the other. Several objects can be shaded but changing colours to do that will result in colours overlapping.



```
1 CLEAR 32476: LET start=3247
7
100 INK 1: CIRCLE 100,100,60: G
O SUB 9996: STOP
9996 OVER 1: RESTORE 9000: FOR q
=start TO start+122: READ p: POK
E q,p: NEXT q: RANDOMIZE USR sta
rt: OVER 0: RETURN
9997 DATA 62,2,205,1,22,6,175,14
,255,17,0,190,62,190,186,40,2,62
,195,186,40,2,24,29,213,197,205,
```

```
206,34,205,213,45,193,209
9998 DATA 254,1,40,5,17,0,190,24
,47,62,195,186,40,42,17,0,178,24
,37,213,197,205,206,34,205,213,4
5,193,209,254,0,40,9,62,178,186
9999 DATA 40,18,22,195,24,14,62,
178,186,32,2,80,89,213,197,205,2
29,34,193,209,13,32,175,62,190,1
86,40,7,62,195,186,40,2,24,4,5,3
2,155,201,123,185,40,248,12,245,
197,205,229,34,193,241,24,243
```



# SCREEN FLASH

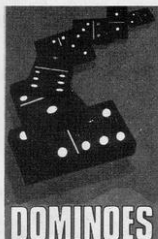
GRAHAM WALKDEN of Ban-chory, Kincardineshire has written **Screen Flash**, a spectacular routine for the 48K Spectrum. When it is RUN, both border and screen change colours and patterns rapidly, including several colours rarely seen on the Spectrum, such as orange and shocking pink.

```
50 CLEAR 29999: FOR 1=30000 TO
30020: READ A: POKE 1,A: NEXT 1
60 DATA 14,255,6,29,32,0,91,62
,239,113,0,211,254,43,61,194,57,
117,5,120,194,55,117,13,121,194,
50,117,201
70 RANDOMIZE USR 30000
80 REM ^ ACTIVATES CODE ^
```



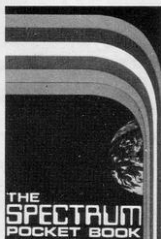
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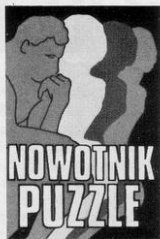
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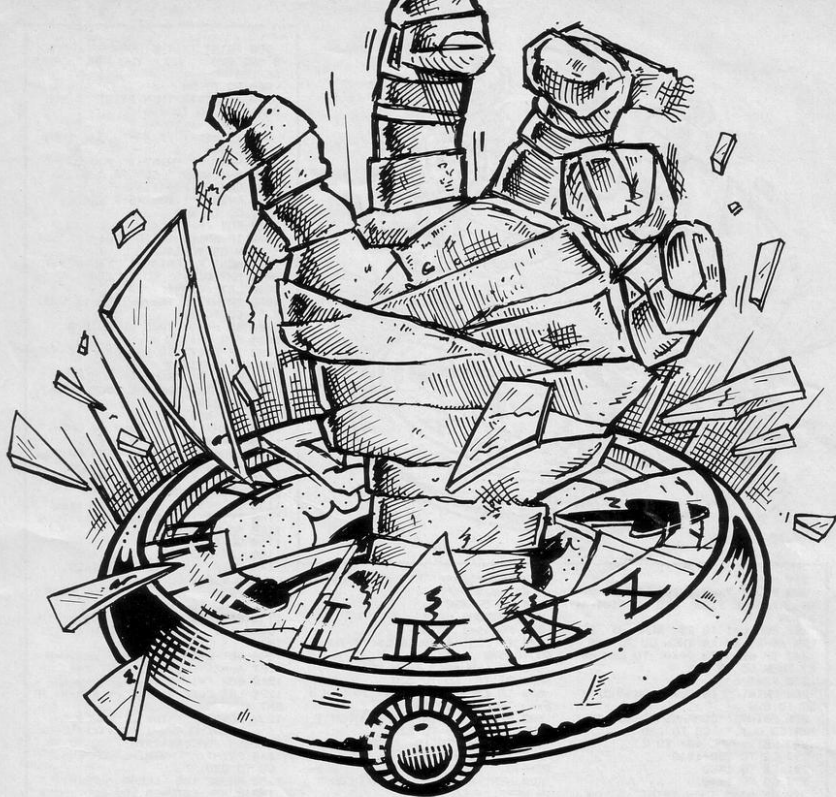
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SP11



# ESCAPE FROM TIME

**E**SCAPE FROM TIME is the first full-scale adventure program for the 48K Spectrum to be printed in *Sinclair Programs*. Your aim is to escape through time into your own world. To do so you must find the crystal of power and a microchip and the crystal of power are needed.

Once you have them you must take them to the Time Room. Commands which you will use most frequently are north, south, east, west, up, down, enter, leave, look, take, drop, list and open.

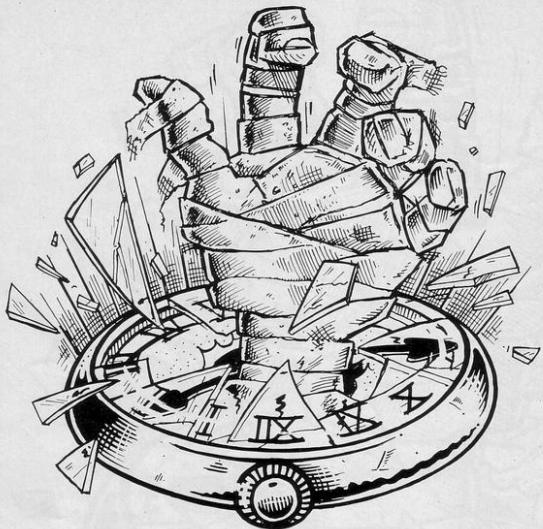
Written by Mark Chapman of Bracknell, Berkshire.

```
10 POKE 23699,20: GO TO 1130
15 PRINT " THE OBJECT IS TO E
SCAPE BACK INTO YOUR OWN TIME
THROUGH A TIME MACHINE, TO FLY
THE MACHINE, A PROGRAMED MICRO-C
HIP AND THE CRYSTAL OF POWER AR
E NEEDED.
```

GOOD LUCK

```
1"
20 IF c<3>=0 THEN GO TO 155
30 LET n=0: LET s=0: LET e=0
LET w=0: LET u=0: LET d=0: LET e
n=0: LET l=0: GO SUB (2000+n)*10
45
40 LET m=0: LET mm=INT (RND*8
)+1
50 IF mm=6 AND n<>0 THEN LET m
r=n
60 IF mm=5 AND s<>0 THEN LET m
r=s
70 IF mm=4 AND e<>0 THEN LET m
r=e
80 IF mm=3 AND u<>0 THEN LET m
```

```
r=u
90 IF mm=2 AND d<>0 THEN LET m
r=d
100 IF mm=1 AND c<>0 THEN LET m
r=c
110 IF mm=7 AND e<>0 THEN LET
mm=en
120 IF mm=8 AND l<>0 THEN LET m
r=l
130 IF mm=0 THEN GO TO 40
140 IF m=r THEN PRINT " IN TH
E ROOM WITH YOU IS THE MUMMY!
" : LET x=x+1: GO SUB 9390
150 IF x=5 THEN GO TO 1250
155 LET n=0: LET s=0: LET e=0
LET w=0: LET u=0: LET d=0: LET e
n=0: LET l=0: GO SUB 2000+r*10
160 LET z=0
170 FOR f=1 TO 12
180 IF c<f><0 THEN GO TO 210
190 IF z=0 THEN PRINT " THERE
IS ALSO,"
200 LET z=1: PRINT " " : c<f>
```



```

950 PRINT " THE ROCK FACE OPEN
S AND YOU WALK THROUGH." : PAU
SE 100
960 GO TO 20
970 IF <>12 THEN PRINT " YOU
CAN'T." : GO TO 220
971 FOR f=1 TO 4
980 IF b<(f, TO 4)="wood" THEN
GO TO 1000
990 NEXT f: PRINT " YOU DON'T
HAVE ANY WOOD." : GO TO 220
1000 LET b<(f)="ladder"
1010 PRINT " YOU'RE A GENIUS !"
1020 GO TO 600
1030 FOR f=1 TO 4
1040 IF b<(f, TO 10)="can of oil
" THEN GO TO 1060
1050 NEXT f: PRINT " YOU DON'T
HAVE ANY OIL." : GO TO 220
1060 LET a<5)=1
1070 PRINT " THE BUTTON IS LOOS
E." : GO TO 220
1080 IF <>31 THEN GO TO 270
1085 FOR f=1 TO 4
1090 IF b<(f, TO 8)="hair pin" T
HEN GO TO 1110
1100 NEXT f: PRINT " YOU NEED S
OMETHING TO PICK THE LOCK WITH."
: GO TO 220
1110 LET a<4)=1
1120 PRINT " THE DOOR IS OPEN."
: LET en=35: GO TO 220
1130 IF en=35 OR n=43 THEN GO TO
1135
1134 PRINT " I DON'T SEE A BUTT
ON !" : GO TO 220
1135 IF a<5)=1 THEN GO TO 1160
1140 PRINT " THE BUTTON IS TO S
TUFF TO PUSH."
1150 GO TO 220
1160 LET n=37
1170 PRINT " THE LIFT RISES." :
GO SUB 9300: GO TO 20
1180 PRINT " YOU CAN'T GO THAT
WAY." : GO TO 220
1190 RESTORE 9000: DIM a<5): DIM
b<(4,10): DIM c<12): DIM c<12):
N
EXT f
1200 LET y=0: LET y=0: LET x=0:
LET m=21: LET b=1: LET n=1
1210 FOR f=1 TO 12: READ a<5):
1220 LET c<(f)=a: LET c<(f)=a: N
EXT f
1230 BORDER 7: INK 0: PAPER 7:
CLS: PRINT FLASH 1: "*****ESCAP
E FROM TIME*****" : GO TO 15
1240 PRINT " NOTHING HAPPENS." :
GO TO 220
1250 PAUSE 100: CLEAR: PRINT "
THE MUMMY CATCHES YOU AND TAKES
YOU PRISONER OF HIS DOMAIN.THERE
IS NO ESCAPE FOR YOU...SRRRY!"
1260 BEEP .001,50: BEEP .001,0:
FOR f=1 TO 5: BEEP .003,INT (RND
*20): NEXT f: BEEP .01,5: GO TO
1260
1270 IF n=21 THEN LET a<3)=1
1280 IF n=4 THEN LET a<1)=1
1290 IF <>21 AND <>4 THEN GO T
O 1330
1300 IF n=21 THEN PRINT " THE M
UMMY CASE OPENS RELEASING THE MU
MMY FROM ITS TOMB."
1310 IF n=4 THEN PRINT " THE DO
OR SWINGS OPEN."
1314 IF n=21 THEN GO SUB 9300
1315 IF n=4 THEN LET en=14
1320 GO TO 220
1330 PRINT " YOU CAN'T." : GO TO
220
1340 IF n=4 THEN GO TO 1360
1350 PRINT " YOU CAN'T." : GO TO
220
1360 FOR f=1 TO 4
1370 IF b<(f, TO 5)="knife" THEN
GO TO 1390
1380 NEXT f: GO TO 1350
1390 PRINT " YOU STAB THE MUMMY
AND IT DISINTERGRATES AT Y
OUR FEET." : LET a<3)=0: LET n=0:
GO SUB 9610: GO TO 220
1400 PRINT " YOU ENTER INTO AND
THEIR ROOM THROUGH THE MIRROR."
: LET en=29: LET en=0: GO TO 220
2010 PRINT " YOU ARE AT A CROSS

```

```

210 NEXT f
220 INPUT "WHAT WILL YOU DO ?":
a=RESTORE 9100: CLS: PRINT "
Y'AS
230 FOR c=1 TO 29: READ d: IF
LEN d=2)LEN a THEN GO TO 250
240 IF d<(3 TO 2)=a<( TO LEN d=
2) THEN GO TO 260
250 NEXT c
260 PRINT "INVALID COMMAND." :
GO TO 220
270 PRINT "COMMAND CANNOT BE C
ARRIED OUT." : GO TO 220
280 LET z=VAL d<( TO 2)
290 GO TO 290+z*10
291 GO TO 1400
295 GO TO 1340
300 IF b<5) THEN PRINT " YOU C
AN'T CARRY ANYMORE." : GO TO 220
310 FOR f=1 TO 12
320 IF c<(f) THEN GO TO 340
330 NEXT f: PRINT " I DON'T SE
E IT !" : GO TO 220
340 IF LEN a=5)LEN c<(f) THEN
GO TO 330
345 IF LEN a<(6 THEN PRINT " T
AKE WHAT ?": GO TO 220
350 IF a<(6 TO 2)=c<(f, TO LEN a
=5) THEN GO TO 370
360 GO TO 330
370 FOR g=1 TO 4
380 IF b<(g,1)=0 THEN GO TO 4
00
390 NEXT g: STOP
400 LET b<(g)=c<(f)
410 LET b<(g)=c<(f)
410 LET b<6)=1
420 LET c<(f)=0
430 PRINT " OKAY."
440 GO TO 220
450 FOR g=1 TO 4
460 IF LEN a=5)LEN b<(g) THEN
GO TO 480
465 IF LEN a<(6 THEN PRINT " D
ROP WHAT ?": GO TO 220
470 IF a<(6 TO 2)=b<(g, TO LEN a
=5) THEN GO TO 490
480 NEXT g: PRINT " YOU DON'T
HAVE IT !" : GO TO 220
490 LET b<6)=1
500 FOR f=1 TO 12
510 IF c<(f)=0 THEN GO TO 530
520 NEXT f: STOP

```

```

530 LET c<(f)=1: LET c<(f)=b<(g)
: LET b<(g)=0
540 GO TO 430
550 RESTORE 9200
560 FOR g=1 TO 4
570 IF LEN a=4)LEN b<(g) THEN
GO TO 590
575 IF LEN a<(5 THEN PRINT " U
SE WHAT ?": GO TO 220
580 IF a<(5 TO 2)=b<(g, TO LEN a
=4) THEN GO TO 600
590 NEXT g: PRINT " YOU DON'T
HAVE IT !" : GO TO 220
600 FOR h=1 TO 10: READ e
610 IF VAL e<( TO 2)=0 THEN GO
TO 630
620 NEXT h: PRINT " YOU CAN'T
IN HERE." : GO TO 220
630 IF e<(3 TO 2)=b<(g, TO LEN
e=2) THEN GO TO 620
640 GO TO VAL e<( TO 2)*10+3000
650 GO TO 20
660 PRINT " YOU ARE CARRYING "
670 LET g=1
680 FOR f=1 TO 4
690 IF b<(f,1)=0 THEN GO TO 7
20
700 PRINT " " : b<(f)
710 LET g=0
720 NEXT f
730 IF g THEN PRINT " NOTHING."
740 GO TO 220
750 IF n=0 THEN GO TO 1180
760 LET n=1: GO TO 20
770 IF a=0 THEN GO TO 1190
780 LET n=1: GO TO 20
790 IF a=0 THEN GO TO 1180
800 LET n=1: GO TO 20
810 IF u=0 THEN GO TO 1180
820 LET n=1: GO TO 20
830 IF u=0 THEN GO TO 1180
840 LET n=1: GO TO 20
850 IF a=0 THEN GO TO 1180
860 LET n=1: GO TO 20
870 IF en=0 THEN GO TO 1180
880 LET n=1: GO TO 20
890 IF l=0 THEN GO TO 1180
900 LET n=1: GO TO 20
910 CLEAR: STOP
920 IF n=0 THEN GO TO 240
930 IF <>31 THEN GO TO 1240
935 LET n=0: GO TO 950
940 LET n=1

```



```

-ROADS IN THE PASSAGE."
2015 LET n=2: LET s=9: LET w=8:
LET e=3: RETURN
2020 PRINT " YOU ARE AT A JUNCT
ION WHERE YOU CAN GO NORTH, WEST O
R SOUTH."
2025 LET n=5: LET w=7: LET s=1:
RETURN
2030 PRINT " YOU COME TO A JUNC
TION IN THE PASSAGE WHERE THE E
XITS ARE WEST AND NORTH, AN OPEN D
OOR IS IN THE EAST END OF THE PAS
SAGE."
2035 LET n=4: LET w=1: LET e=13:
RETURN
2040 PRINT " THE PASSAGE COMES
TO A DEAD END PART FROM A DOOR T
O THE EAST."
2041 IF (K1)=0 THEN PRINT "THE D
OOR IS LOCKED TIGHT."
2042 IF (K1)=1 THEN PRINT "THE D
OOR IS WIDE OPEN." LET n=14
2045 LET s=3: RETURN
2050 PRINT " AT A TURNING IN TH
E PASSAGE, STEPS GO DOWN, THE P
ASSAGE GOES SOUTH AND EAST."
2055 LET s=2: LET e=6: LET d=10:
RETURN
2060 PRINT " A HIGH WALL SEEMS
TO PREVENT YOU FROM GOING EAS
TWARDS, TO THE WEST THE WAY IS CL
EAR."
2065 LET w=5: RETURN
2070 IF (K2)=0 THEN PRINT " THE
FLOOR IS COVERED IN GREASE AND
AS YOU TRY TO GO OVER IT, YOU SLIP
BACK. IT LOOKS AS IF YOU WILL
HAVE TO GO EAST."
2073 IF (K2)=1 THEN PRINT " YOU
ARE IN A CLEAR, EAST/WEST PASS
AGE." LET w=12
2075 LET e=2: RETURN
2080 PRINT " A SHEET OF ROCK BL
OCKS YOUR WAY TO THE WEST SO EXIT
TO THE EAST."
2085 LET e=1: RETURN
2090 PRINT " YOU COME TO A JUNC
TION IN THE PASSAGE, DIRECTIONS
ARE NORTH, EAST AND SOUTH."
2095 LET n=1: LET s=17: LET e=15:
RETURN
2100 PRINT " AT THE BOTTOM OF T
HE STEPS IS A CELLAR, THE ROOM IS
PRETTY MUCH EMPTY AND VERY DIRT

```

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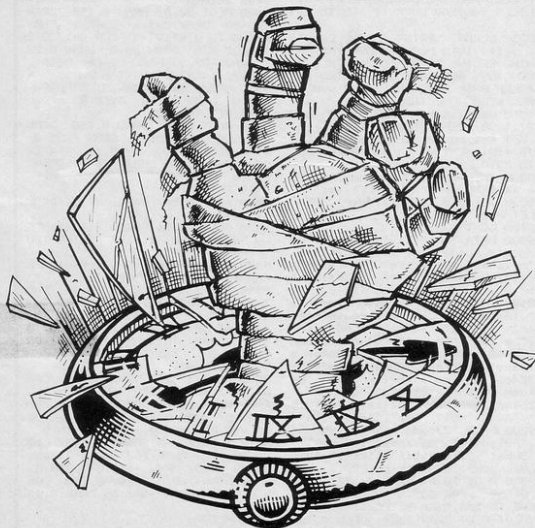
Y."
2105 LET u=5: RETURN
2110 PRINT " YOU ARE IN A ROOM
WITH A TABLE IN THE CENTRE OF IT
BEHIND YOU, THE ROCK FACE IS CL
EARED."
2115 RETURN
2120 PRINT " YOU ARE IN A WORKS
HOP, TOOLS HANG AROUND THE WAL
LS AND A WORK BENCH IS IN TH
E CENTRE."
2125 LET l=7: RETURN
2130 PRINT " YOU ARE IN THE LIV
ING QUARTERS OF A CREATURE, A FIR
E PLACE IS IN THE CORNER OF THE R
OOM."
2135 LET l=3: RETURN
2140 PRINT " THROUGH THE DOOR Y
OU FIND THAT YOU ARE IN A LIBRAR
Y, BOOKS ARE STACKED NEATLY ON S
HELVES THAT ARE VERY HIGH."
2145 LET l=4: RETURN
2150 PRINT " YOU COME TO A RIVE
R FLOWING NORTH TO SOUTH, ON T
HE BANK IS A BOAT, YOU CAN RETURN
TO THE WEST."
2155 LET w=9: RETURN
2160 PRINT " YOU ROW THE BOAT A
CROSS THE RIVER WHERE YOU ENTE
R A CAVERN, YOU BURD LAND AND
LEAVE THE BOAT ON THE BANK."
2165 RETURN
2170 PRINT " YOU ARE AT THE TOP
OF SOME STEPS, A PASSAGE LEA
DS NORTH."
2175 LET d=10: LET n=9: RETURN
2180 PRINT " YOU ARE AT THE BOT
TOM OF THE STEPS, A CORRIDOR GOE
S NORTH AND A DOOR IS IN THE WE
ST WALL."
2185 LET u=17: LET n=19: LET w=2:
0: RETURN
2190 PRINT " YOU ARE IN THE CEN
TRE OF SOME PASSAGES, THEY GO NO
RTH, EAST AND SOUTH."
2195 LET e=23: LET n=21: LET s=1:
0: RETURN
2200 PRINT " YOU ARE IN A BROOM
CLOSET."
2205 LET l=10: RETURN
2210 PRINT " YOU ARE IN AN EGYP
TIAN ROOM, A MUMMY CASE STANDS I
N THE CORNER, ON IT IS INSCRIBED
"POKE 23606,60: POKE 23607,0

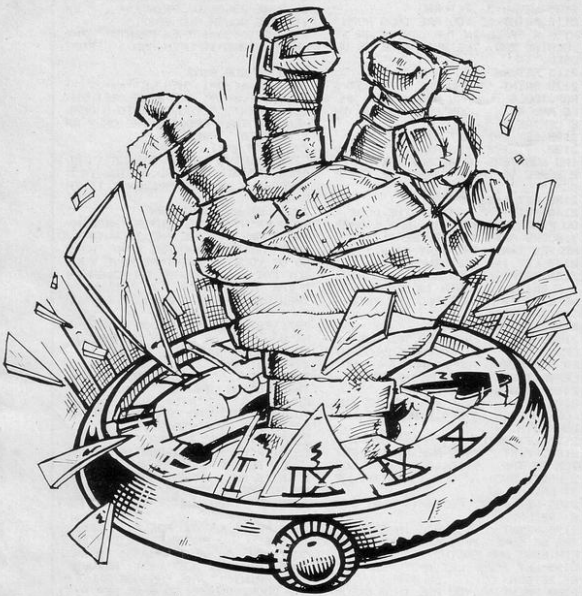
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PRINT "BEWARE": POKE 23607,6
0: POKE 23606,0: PRINT " EX
ITS ARE SOUTH AND EAST."
2212 IF (K3)=1 THEN PRINT " THE
MUMMY CASE IS OPEN AND" EMPTY
Y 11
2213 GO SUB 9330
2214 IF (K3)=1 THEN LET e=27
2215 LET s=19: LET e=22: RETURN
2220 PRINT " YOU COME TO A DEAD
END IN THE PASSAGE, THE ONLY WA
Y BACK IS WEST."
2225 LET l=21: RETURN
2230 PRINT " THIS PASSAGE IS CL
EARED OFF AT ONE END, A SIGN IS U
NREADABLE ON THE WALL, EXIT TO TH
E WEST."
2235 LET w=19: RETURN
2240 PRINT " YOU ENTER THROUGH
THE MUMMY CASE AND IT SWINGS
SHUT--TITAT I YOU ARE NEAR THE E
ND OF YOUR ADVENTURE, HAVE YOU
GOT THE CRYSTAL OF POWER AN
D THE MICRO CHIP? IF YOU HAVE
THEN USE THEM IN THE RIGHT ORDER."
2271 PRINT " IF YOU DON'T HAVE O
NE OF THEM OR EITHER OF THEM TH
EN YOU ARE LOST."
2275 RETURN
2280 PRINT " A HIGH WALL IS TO
THE WEST, ON THE LEFT OF THE PAS
SAGE IS A MIRROR IN THE WALL.
TO THE EAST YOU CAN SEE A TURNI
NG IN THE PASSAGE."
2285 LET e=30: RETURN
2290 PRINT " A MIRROR IS IN THE
WALL BEHIND YOU, THE ROOM YOU AR
E IN IS AN ANTI-ROOM, A DOOR IS O
PEN TO THE EAST."
2295 LET l=20: LET e=36: RETURN
2300 PRINT " YOU ARE AT A BEND
IN THE PASSAGE, YOU CAN GO
SOUTH OR WEST."
2305 LET u=20: LET s=31: RETURN
2310 PRINT " THE PASSAGE ENDS I
N A DOOR, YOU CAN GO BACK NORTH I
F YOU NEED."
2311 IF (K4)=0 THEN PRINT "THE D
OOR IS LOCKED."
2312 IF (K4)=1 THEN PRINT "THE D
OOR IS OPEN."
2313 IF (K4)=1 THEN LET e=35
2315 LET n=30: RETURN
2320 PRINT " IN THE ROOM IS A L
IFT, THE BUTTON IS ON THE WA
LL BY IT, AN OPEN DOOR IS THE EX
IT FROM THE LIFT ROOM."
2325 LET l=30: RETURN
2330 PRINT " IN THE ROOM IS A D
RESSING TABLE."
2335 LET l=29: RETURN
2340 PRINT " THE LIFT OPENS ON
TO A HALL, YOU CAN GO BACK DOWN
N OR EAST."
2345 LET d=43: LET e=38: RETURN
2350 PRINT " YOU ARE STANDING A
T A JUNCTION, YOU MAY GO NORTH, WE
ST OR SOUTH."
2355 LET w=42: LET n=39: LET s=4:
0: RETURN
2360 CLEAR: PRINT " YOU FALL I
NTO A PIT COVERED BY FLOOR TILES
AS THEY OPEN UNDER YOUR FEET, Y
OU TRY TO GRASP THE EDGE BUT MI
SS AND FALL TO YOUR DEATH." PA
USE 300: GO SUB 9460
2365 BEEP .003,10: BEEP .01,0: B
EEP .02,INT (RND*10): GO TO 2395
2400 PRINT " YOU WALK INTO A RO
OM AND ON THE FLOOR YOU SEE A TRAP
DOOR, YOU WILL HAVE TO GO BACK
NORTH, BUT ONLY ONCE."
2405 LET n=39: LET s=41: RETURN
2410 GO TO 2390
2420 GO SUB 9530: PRINT " YOU A
RE BACK AT THE LIFT, YOU CAN ON
LY GO DOWN OR BACK EAST."
2425 LET e=38: LET d=43: RETURN
2430 GO SUB 9500: PRINT " THE L
IFT OPENS ONTO THE GROUND FLOOR,
A DOOR IS OPEN IN THE WEST WALL O
F THE ROOM, PUSH THE BUTTON TO GO
BACK UP."
2435 LET l=30: RETURN

```





```

DRAW -20.0: DRAW 0,-20: BEEP .0
1,1,2: NEXT 9: NEXT 1
3310 DRAW 20.0: DRAW 0,20: DRAW
-20.0: DRAW 0,-20: OVER 0
9320 RETURN
9330 PLOT 122.0: DRAW 20.0: DRAW
5.40: DRAW -15.10: DRAW -15.10
DRAW 5,-40
9340 IF 0.3=1 THEN GO TO 9370
9350 POKE 23607,0: PRINT AT 17,1
5:"FAN"
9360 POKE 23607,60: GO TO 9380
9370 PLOT 152.0: DRAW 20.0: DRAW
5.40: DRAW -15.10: DRAW -15.10
DRAW 5,-40
9380 RETURN
9390 PLOT 80.0: DRAW 4.30: DRAW
0.20: DRAW -3,-20: DRAW -6.0: DR
AW 3,20: DRAW 10.0: DRAW -2.10:
DRAW 11.0: DRAW -2,-10: DRAW 10,
0
9400 DRAW 3,-20: DRAW -6.0: DRAW
-3,20: DRAW 0,-20: DRAW 4,-30:
DRAW -22.0: DRAW 10.0: DRAW 1,15
DRAW 1,-15
9410 RETURN
9420 OVER 1: FOR h=0 TO 50 STEP
4: FOR g=1 TO 2: BEEP .01,20: PL
OT 120,h: DRAW 40.0: DRAW 10,30:
DRAW -15.0: DRAW -15.5: INK 5:
DRAW 4,4: DRAW -4,4: DRAW -4,-4:
DRAW 4,-4: INK 0: DRAW -15,-5:
DRAW -15,0: DRAW 10,-30
9430 NEXT g: NEXT h: OVER 0
9440 OVER 1: PLOT 120,h: DRAW 40
.0: DRAW 10,30: DRAW -15.0: DRAW
-15.5: INK INT (RND*7): DRAW 4,
4: DRAW -4,4: DRAW -4,-4: DRAW 4,
-4: INK 0: DRAW -15,-5: DRAW -1
5,0: DRAW 10,-30
9450 PAPER 0: BORDER 0: CLS: PA
PER 7: BORDER 7: CLS: RETURN
9460 PLOT 0,100: DRAW 255,0: DRAW
W -130,0: DRAW OVER 1,40,0: DRAW
-2,-25
9470 PLOT 125,0: DRAW 50,0: DRAW
0,10: DRAW -6,0: DRAW 0,-4: DRAW
W -30,2: DRAW -10,-2: DRAW -5,2:
DRAW -7,-7,PI: DRAW 3,-1: DRAW
3,0
9480 PLOT 145,3: DRAW 0,-1: DRAW
-15,0: DRAW 0,2: DRAW 15,0: DRAW
W 0,-1: DRAW 2,0:
9490 RETURN
9500 PLOT 20,0: DRAW 0,150: DRAW
0,-50: DRAW 235,0: OVER 1: FOR
h=100 TO 0 STEP -2: FOR g=1 TO 2:
PLOT 0,h: DRAW 20,0: DRAW 0,20
: DRAW -20,0: DRAW 0,-20: BEEP .
01,h,2: NEXT g: NEXT h
9510 DRAW 20,0: DRAW 0,20: DRAW
-20,0: DRAW 0,-20: OVER 0
9520 RETURN
9530 PLOT 20,0: DRAW 0,150: DRAW
0,-50: DRAW 235,0: DRAW -235,0
9540 PLOT 0,100: OVER 1: DRAW 20
0,0: DRAW 0,20: DRAW -20,0: DRAW
0,-20: OVER 0
9550 RETURN
9560 PLOT 0,50: DRAW 127,2: DRAW
127,-2
9570 PLOT 40,51: DRAW -10,15: DR
AW 50,0: DRAW -1,-14: PLOT 0,100
: DRAW 50,-30
9580 DRAW 40,10: DRAW 100,-10: D
RAW 14,10: DRAW 55,0
9590 PLOT 50,30: DRAW -5,10: PLO
T 50,30: DRAW 10,10: PLOT 50,30:
DRAW 10,5: PLOT 50,30: DRAW 10,0
: DRAW 50,30: DRAW 6,10: PLOT 5
0,30: DRAW -10,5: PLOT 50,30: DR
AW -10,0
9600 RETURN
9610 PLOT 125,20: DRAW 20,0: DR
AW INK 2,10,0: DRAW INK 2,3,-2: D
RAW INK 2,3,-2: DRAW -30,0: DR
AW 0,-3: DRAW 0,14: DRAW 0,-6: DR
AW -10,0: DRAW 0,-2: DRAW 10,0
9620 PLOT 40,30: DRAW 100,0: DR
AW -50,0: DRAW 0,100: DRAW 0,-60
: DRAW 50,0: DRAW -100,0: DRAW 0,
-20: DRAW 100,0: DRAW 0,120: DR
AW 0,-120: DRAW -100,0: DRAW 0,12
0
9630 RETURN

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```

3060 PRINT " THE LADDER REACHES
THE TOP OF THE WALL AND YOU CL
IMB UP IT.ON TOP OF THE WALL YOU
PICK IT UP AND USE IT TO GET D
OWN THE OTHERSIDE."
3065 LET r=20: GO TO 3230
3070 PRINT " THE GREASE WASHES
OFF THE FLOORMAKING IT CLEAN."
3075 LET c(2)=1: GO TO 20
3150 FOR f=1 TO 4: IF b*(f, TO 4
)=0:GOTO THEN GO TO 3153
3151 NEXT F
3152 CLEAR: GO SUB 9560: PRINT
" THE BOAT DRIFTS DOWN STREAM A
S YOU DON'T HAVE ANY OARS,AS YOU
DRIFT YOU HIT YOUR HEAD AND FA
LLOVERBOARD,UNABLE TO REACH THE
BANK,YOU DROWN." GO TO 3395
3153 PRINT " YOU ROW THE BOAT T
O THE OTHER BANK."
3154 IF r=15 THEN GO TO 3157
3155 LET r=-15: GO TO 20
3157 LET r=15: GO TO 20
3160 GO TO 3150
3160 PRINT " THE DOOR UNLOCKS A
NO FALLS OPEN": LET em=20: GO TO
320
3210 PRINT " THE WRITING ON THE
MUMMY CASE SAYS "BEWARE" GO
TO 320
3220 PRINT " THE SIGN SAYS-"USE
THE WORDS "OPEN BESAME" IN
THE RIGHT PLACE AND YOUR WAY MI
LL BE CLEARED." GO TO 320
3270 IF a*(5 TO 7)=micro-chip" O
R a*(5 TO 7)=m" AND u=1 THEN GO
TO 3320
3275 GO TO 3300
3280 PRINT " YOU CLIMB OVER THE
WALL." LET r=5: GO TO 30
3290 IF a*(5 TO 7)=crystal" OR a
*(5 TO 7)=c" AND u=1 THEN GO TO
3350
3300 IF a*(5 TO 7)=crystal" OR a
*(5 TO 7)=c" THEN LET u=1

```

```

3310 GO TO 330
3320 CLEAR: PRINT " AS YOU REA
CH IN AND CONNECT THEMICRO-CHIP,
POWER FROM THE CRYSTALIMMEDIATELY
KILLS YOU,AND LUCK 1" GO TO 339
5
3350 CLEAR: PRINT " THE CRYSTA
L SLIPS INTO PLACE AND THE MAC
HINE BEGINS TO SHAKE,YOU FALL ON
CONCIOUS AND MAKE UP TO FIND YOU
RSELF BACK HOME IN YOUR OWN TI
ME. WELL DONE INDEED!"
3360 BEEP .1,10: BEEP .1,20: BEE
P .1,30: BEEP .1,20: BEEP .1,10:
FOR f=1 TO 10: BEEP .01,INT (f
/10)+10: NEXT f: GO SUB 9420: GO
TO 3350
3380 IF a*(5 TO 7)=micro-chip" O
R a*(5 TO 7)=m" THEN LET u=1
3390 IF a*(5 TO 7)=ladder" THEN
LET r=6
3400 GO TO 3290
3400 DATA "ev",11,"oars",12,"uo
od",13,"code book",14,"boat",15
,"crystal",16,"knife",29,"can of
oil",10,"micro-chip",40,"hair Pi
n",36,"mop",20,"torch",1
9100 DATA ".190 through mirror",
".1enter mirror",".1through mirr
or",".1Skill",".146north",".148south",
".150east",".152west",".154up",".156dow
n",".158enter",".160leave",".162open s
esame",".164open",".166make ladder",
".174on button",".176pick lock",".184
push button",".186take",".188drop",".1
26use",".136look",".137list",".162quit
n",".146n",".148s",".150e",".152u",".156d"
3400 DATA ".136code book",".116boat",
".123ladder",".106ladder",".107mop",
".150hat",".127crystal",".118key",".12ic
ode book",".127micro-chip"
9300 PLOT 20,0: DRAW 0,150: DRAW
0,-50: DRAW 235,0: OVER 1: FOR
h=0 TO 100 STEP 3: FOR g=1 TO 2:
PLOT 0,h: DRAW 20,0: DRAW 0,20:

```



# HAUNTED DUNGEON

THE MAJORITY of microcomputer owners aim to provide their computers with as much memory as possible. Six months after buying his ZX-81, David Aubrey-Jones of Burley, Leeds removed the RAM pack and set himself the challenge of writing a mappable adventure game.

The result was **Haunted Dungeon** and some memory-saving techniques which allowed him to write other adventures on a 1K ZX-81. Since then he has bought a Spectrum and begun writing machine code games, the latest of which, **Supertalk**, allows the Spectrum to read sentences and to learn words. It has just been marketed by Abbex.

To play the game you must first give values to some variables:

```
LET I=1
LET F=5
LET X=6
LET T=10
LET H=100
```

The game should then be started by ENTERING GOTO 1.

You enter the dungeon down some steps with an initial strength of 20. Your object is to find the treasure and return to the steps without your strength falling below 1. Enter N, S, E or W to move in different directions. You may find your way barred by a wall, have your strength sapped by a monster, or increased by finding food. Divining rods point to the treasure; 1 indicates that they are pointing south and -1 that they are pointing north.

```
25 LET A=INT (RND*H*H)
30 LET B=A+H
35 LET G=INT (A+RND*H)
40 IF G/F=INT (G/F) OR A/F=INT
(A/F) THEN GOTO T
45 LET S=T+T
50 LET P=A
52 PRINT "(99)steps"
53 IF NOT G THEN PRINT "AND BE
CH...E";R;Y
55 IF S>T+T THEN LET S=T+T
60 PRINT S
65 LET U=P
70 INPUT M$
80 LET P=P+(M$="E")+ (M$="S")*F
-(M$="W")-(M$="N")*F
100 IF P<>Q AND P>A AND P<=B A
ND P/F<>INT (P/F) THEN GOTO H+T+
T
105 LET P=Q
110 PRINT "
115 GOTO CODE "PI"
120 CLS
125 PRINT ("%%" AND P=G)
130 LET G=G*(P<>G)
140 IF P=A THEN GOTO CODE "H"
160 RAND P
165 LET R=T**F/RND
170 LET R=INT ((R-INT R)*T)
180 LET S=S-I+T*(R=F)-INT (RND*
T*(R<=I))
190 LET P=P+INT (RND*T*(R=I+I)*
(P+T<=B))
210 PRINT ("ghost" AND NOT R)+(
"dragon" AND R=I)+( "giant bat")
AND R=I+I)+( "ITS dark AND WET" A
ND R=X)
220 IF R=X THEN PRINT "DIVINING
ROD=";SGN (G-P)
240 IF S=I THEN GOTO CODE "R"
250 PRINT "R.I.P"
```







# STAR SOCCER



**The ACTION game with the thrills of real football**

Choose your team formations from 3-2-5, 4-2-4, or 4-4-2.

When the game starts it's up to you to plan your moves and outwit your opponents. See the results played out by fast machine code routines on a birds-eye view of the pitch.

**Make the split second decisions that the professionals have to!**

Shall I make the short safe pass and maybe let the defence re-group?

Or do I try a long defence-splitting ball and risk an interception?

Has my winger got the speed to take on the full back

Do I try a long shot and catch the goalie off his line?

Or shall I give the ball to a team-mate in a better position?

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- All programs are recorded on a top quality cassette (usually Sony) and are accompanied with an instruction leaflet giving a brief explanation of the theory.

Available for the ZX-81 16K (Price **£8.95**) and the ZX Spectrum 48K (Price **£9.95**) from:

**HARTLAND SOFTWARE**  
(Dept. R), 8 Penzance Place,  
London W11 4PA.

A large, bold, black letter 'A' is positioned above a large, bold, black letter 'T'. To the right of the 'T' is a small, black, stylized zigzag line.

**£5.50**

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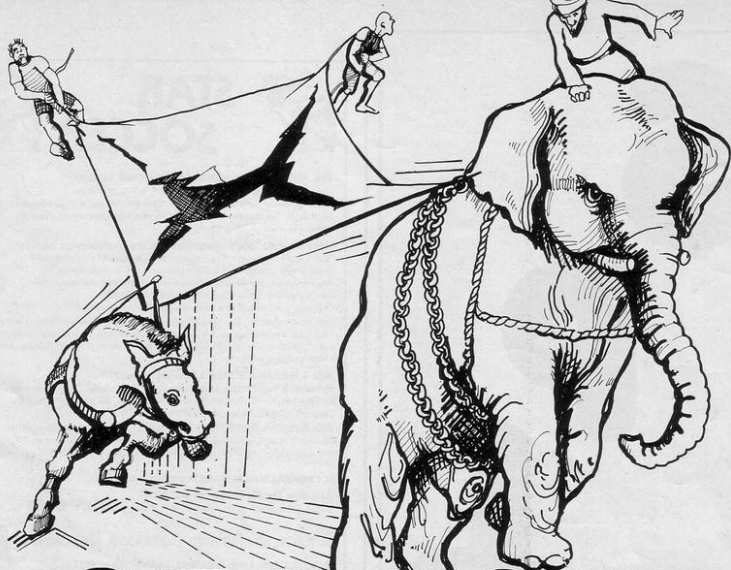
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# FOUR-WAY SPLIT

```

1 REM 00000000000000000000000000000000
00000000000000000000000000000000000000
00000000000000000000000000000000000000
00000000000000000000000000000000000000
20 LET X=16514
30 LET A$=""
40 IF A$="" THEN INPUT A$
50 POKE X,16*CODE A$+CODE A$(2
)-476
60 LET A$=A$(3 TO )
70 LET X=X+1
80 GOTO 40

```

06	0F	C5	2A	0C	40	23	11
D5	02	ED	5A	E5	11	21	00
ED	52	D1	01	4A	01	ED	B8
06	20	23	36	00	10	FB	2A
0C	40	23	E5	11	21	00	ED
5A	D1	01	6B	01	ED	B0	06
16	2A	0C	40	23	F5	D1	23
C5	01	0F	00	ED	B0	2B	36
00	11	13	00	ED	5A	54	5D
1B	C1	10	EC	06	16	2A	0C
40	11	20	00	ED	5A	54	5D
2B	C5	01	10	00	ED	B8	11
32	00	C1	10	EF	C1	10	9A
C9							

```

10 REM **FOUR WAY SPLIT**
20 REM **
30 REM ** BY M.A.BOOLES **
40 REM
50 FOR F=1 TO 11
60 PRINT "(64*1SP)"
70 NEXT F
75 PRINT AT 9,6:" THE FOUR WAY
SPLIT "
76 PRINT AT 10,15;"BY"
77 PRINT AT 11,11;"M.A.BOOLES"
78 PRINT AT 12,9;"press any ke
y"
80 IF INKEY$="" THEN GOTO 80
90 RAND USR 16514

```

**F**OUR-WAY SPLIT is a machine code sub-routine, written by M A Booles of Spalding, Lincolnshire for the 16K ZX-81. When it is called by the command RAND USR 16514 it will clear the screen by dividing it into four and scrolling each quarter off the screen in a different direction.

Enter program 1 and then RUN it. Then type-in the numbers in the second section, two at a time, working from left to right. When you have entered all the numbers, stop the program by entering "S". The machine code will then be transferred to line one of the program. Delete lines 20 to 30 and replace them with the third program. That will demonstrate the sub-routine when GOTO 10 is entered.





# SPACE WAR

**Y**OU PLAY the part of a megalomaniac in a spaceship, determined to destroy every other ship in sight. The television screen represents the view from your window. By pressing 0 your laser cannon will shoot whatever is in the centre of your sights. Move with cursor keys 5,6,7 and 8.

Remember that it is your ship which will move, so your window will appear to remain stationary and the enemy spaceship will seem to move. Thus as you move left the enemy will appear to move right.

Written for the 16K Spectrum by Tim Rose of Woolwich, London.

```
50 INK 7: LET N$="SPACE WAR":
LET A$="ab": LET B$="d c": LET
C$="l 3": LET S=0: LET TS=0
60 BORDER 1: PAPER 0: CLS
70 PRINT INK 7: BRIGHT 1: ""
SPACE WAR""
80 PRINT "The object of the g
ame is to shoot down as many
enemy space fighters as possibl
e"
90 PRINT "Use the cursor keys
to move your turret, and 0 to fi
re"
100 PRINT "Space time units ar
e displayed counting down to 0.
You finish when your time is u
p"
```

```
110 PRINT "20 POINTS DEDUCTED
FOR A MISS 50 POINTS ADDED FOR
A HIT"" INK 2: "SIGHT TURNS RED
WHEN FIGHTER IS IN R
ANGE "
120 PRINT INK 4: "" PRESS A
NY KEY TO GO": INK 6: ""
GOOD LUCK"
130 PRINT AT 21,0: INK 6: PAPER
2: " T.ROSE NOV. 1982
"
140 IF INKEY$="" THEN GO TO 014
A
150 REM GAME STARTS HERE
160 CLS
170 PRINT AT 0,13: B$
180 PRINT AT 13,13: C$
190 LET Q=INT (RND*16)+2: LET R
=INT (RND*26)+2
200 PLOT 0,15: DRAW 255,0: FOR
X=0 TO 40 STEP 4: PLOT 125-X,15:
DRAW -2*X,-15: PLOT 125+X,15: D
RAW 2*X,-15: NEXT X: LET Q=13: F
OR X=73 TO 125 STEP 5: PLOT X,15
DRAW -X,-0: LET Q=INT (Q/6)+5:
NEXT X: LET Q=13: FOR X=178 TO
255 STEP 5: PLOT X,15: DRAW 255-
X,-0: LET Q=INT (Q/6)+5: NEXT X:
210 PRINT 00: FLASH 1: INK 6: P
APER 2: " TOP SCORE=": TS: " by " : n
$
220 FOR T=500 TO 0 STEP -1
230 PRINT INK 2: BRIGHT 1: Q,
R: A$
240 LET V=0: LET W=R
250 LET Q=Q+INT (RND*2)-1: LE
T R=R+INT (RND*2)-1
260 LET R=R+(2*(INKEY$="5")-(IN
KEY$="8"))
270 LET Q=Q+(2*(INKEY$="7")-(IN
KEY$="6"))
280 IF Q<0 THEN LET Q=0+2
290 IF R<0 THEN LET R=R+2
300 IF Q>18 THEN LET Q=0+2
310 IF R>28 THEN LET R=R-2
320 LET I=6: IF Q>9 AND Q<12 AN
D R>12 AND R<16 THEN LET I=2
330 PRINT INK 1: AT 0,13: B$ AT 1
3,13: C$
340 IF INKEY$="0" THEN GO TO 40
B
350 IF S<0 THEN LET S=0
360 PRINT AT V,W: " ": INK 1: P
APER 4: AT 0,0: "SCORE=": S: " : IN
K 0: PAPER 5: AT 0,15: "TIME=": T: "
"
370 BEEP 0.0025,5: BEEP 0.0025,
5
380 NEXT T
390 GO SUB 0650
400 PRINT INK 6: FLASH 1: AT 10,
10: "GAME OVER": INK 2: "SCORE=": S
410 IF S>TS THEN GO SUB 600
420 BORDER 1: PRINT AT 20,2: IN
K 3: "PRESS ANY KEY TO PLAY AGAIN
"
430 LET S=0
440 FOR X=0 TO 500
450 IF INKEY$="" THEN GO TO 15
G
460 NEXT X
470 GO TO 60
480 BEEP 0.01,7: FOR P=2 TO 6 S
TEP 2: INK P: PLOT 10,16: DRAW 1
13,72: DRAW 120,-72: PLOT 11,16:
DRAW 112,71: DRAW 120,-71: NEXT
P
490 BEEP 0.015,9: BEEP .015,9
500 IF Q>9 AND Q<12 AND R>12 AN
D R<16 THEN GO TO 530
510 LET S=S+20
520 GO TO 580
```



```

530 PRINT PAPER 6: INK 2: FLASH
1: AT 0,R-1: "cccc": AT 0+1,R: "cc"
JAT 0-1,R: "cc"
540 FOR X=0 TO 10: BEEP 0.005,4
BEEP 0.0,9: NEXT X
550 BEEP 0.01,7: BEEP 0.015,2
560 FOR M=0 TO 50: NEXT M: PRINT
AT 0,R-1: " " "JAT 0-1,R: " "
AT 0+1,R: " " "LET Q=INT (RND*15
)+2: LET R=INT (RND*25)+2
570 LET S=S+50
580 FOR P=19 TO 11 STEP -1: PRI
NT AT P,0:
590 GO TO 350
600 FOR X=0 TO 150: BORDER
R 2: BORDER 6: NEXT X: INPUT J: F
LASH 1: "YOU'VE ACHIEVED THE HIGH
SCORE.": FLASH 0: "INPUT YOUR N
AME IN 9 LETTERS OR LESS.": LI
NE 0
610 IF LEN N>9 THEN GO TO 05
00
620 LET TS=0
630 FOR X=0 TO 19: BORDER RND*7
FOR U=0 TO 9: NEXT U: NEXT X
640 GO TO 420
650 FOR N=0 TO 2: BEEP 0.2,0: B
EEP 0.3,5: NEXT N: BEEP 0.3,2: B
EEP 0.2,5: BEEP 0.3,6: BEEP 0.2,
7: BEEP 0.2,6: BEEP 0.2,5: BEEP
0.2,4
660 RETURN
670 RESTORE 600: FOR X=0 TO 55:
READ A: POKE USR "A"+X, A: NEXT
X: RUN
680 DATA 64,135,136,243,243,136
,135,64,2,225,17,207,207,17,225,
2,74,0,191,0,146,0,170,73,254,19
2,160,144,136,120,120,0,127,3,5,
9,17,1,1,0,0,120,120,136,144,160
,192,254,0,1,17,9,5,3,127
690 SAVE "SPACE" LINE 670

```

# ASTEROIDS

**T**RAVELLING towards your home planet in a spacecraft you must cross an asteroid belt. As soon as an asteroid appears on your screen, move your laser sights towards it, using the usual cursor keys, and destroy it to avoid hitting it. The quicker you hit an asteroid the bigger your score will be.

**Asteroids** was written for the 16K Spectrum by Philip Newby of Dobcross, Oldham.

```

1 GO SUB 9000: LET ink=5: LET
ht=0
10 GO SUB 5000: GO SUB 1000: L
ET v=14: LET w=15
20 LET lives=6: LET ls="!!!!!!"
30 LET count=0
40 LET sc=0
100 LET a=INT ((RND*225+16)): L
ET b=INT (RND*72+64)
110 LET adis=14
200 CIRCLE INK 6:a,b,15=adis
210 PRINT INK 6:AT 10,2+adis:"C
H": INK 0: PAPER 0: "JAT 19,227
INVERSE 1: INK 4:10(1 TO lives)
: INK 2: INVERSE 1:10(lives TO 5
): BEEP .01,0
215 PRINT AT x,y: INK 0: "
220: LET x=x+30: INKEY="6" AND
x<14)-30: INKEY="7" AND x>2): LE
T y=y+30: INKEY="8" AND y<30)-30:
INKEY="5" AND y>0)
221: LET x=x+INKEY=CHR$ 10 AND
D x<14)-INKEY=CHR$ 11 AND x>2)
: LET y=y+INKEY=CHR$ 9 AND y<3
0)-INKEY=CHR$ 8 AND y>0)
240 LET adis=adis-1
250 IF ATTR (x,y)<6 AND (INKEY$
="0" OR INKEY$=CHR$ 12) THEN FOR

```



```
f=50 TO 10 STEP -10: BEEP .1,f:
NEXT f: GO SUB 2000: LET sc=sc+
ad: LET account=account+1: PAUSE
100: GO SUB 1000: GO TO 100
251 IF INKEY="" OR INKEY=CHR
8 12 THEN BEEP .1,50: GO SUB 450
8
```

```
255 PRINT AT x,y: INK 9;"X"
260 IF ad=0 THEN BURDER 2: BE
EP .2,-40: LET lives=lives-1: GO
SUB 2500: GO SUB 1000: BURDER 5
GO TO 100
```

```
270 PRINT AT 0,0: INK 9:"SCORE
":sc: ASTEROIDS "account": HIGH
"hi:"
```

```
280 IF account=100+INT (RND*2-1)
THEN GO TO 2000
```

```
999 GO TO 200
```

```
1000 INK ink: BURDER 5: PAPER 0:
CLS: PRINT AT 0,0: "C4Kisp:94
:20Kisp:197"
```

```
1010 PRINT AT 15,0: "C01:10Kisp:02
:6Kisp:01:10Kisp:02:33Kisp:10Kisp:
14Kisp:01: INK 2:"2": INK 4:"ab":
INK ink: "15Kisp:3Kisp:": INK 3:
"DAMAGE": INK ink: "5Kisp:": INK
9:"LR5:": INK ink: "5Kisp:": INK
ink: "C3Kisp:": INK ink: "C6Kisp:"
1999 RETURN
```

```
2000 PLOT 0,67: DRAW INK 3:a,b-8
7: DRAW INK 3:255-a,-(b-87)
2010 PLOT 32,25: DRAW INK 3:adis
8,0
```

```
2030 PRINT INK 2: PAPER 6: FLASH
1:AT x-1,y-1:"dd":AT x,y-1:"dd
d":AT x+1,y-1:"dd":AT 18,3:adis
1:"dd"
2040 FOR f=0 TO 250: NEXT f: RET
URN
```

```
2500 IF lives<1 THEN LET ink=2:
GO SUB 1000: GO SUB 9500: FOR f=
0 TO 1000: BURDER 2: BURDER 6:
NEXT f: LET ink=5: PRINT INK 9:
FLASH 1:AT 3,3:"DEAD": FLASH 0:R
```

```
T 4,3:"PRESS ANY KEY TO RUN":AT
5,3:"SCORE "sc: FOR f=50 TO -1
0 STEP 10: BEEP .5,f: NEXT f: PA
USE 0: PAUSE 0: GO TO 10
2510 RETURN
```

```
3000 GO SUB 1000: PRINT AT 3,3:
INK 9:"LANDING SEQUENCE ACTIVAT
ED": FOR f=0 TO 100: BEEP .05,f-
50: NEXT f: FOR f=14 TO 2 STEP -
1: FOR a=0 TO 10: NEXT a: PRINT
INK 6:AT 10,2+f:"(cisp)Kisp:"A
T 19,2+f: INVERSE 1:"f e": INVER
SE 0:"":AT 17,2+f:"(cisp)f "N
EXT f: PLOT 0,56: DRAW INK 6:255
,0,-1: PRINT AT 3,3: FLASH 1: IN
K 9:"HOME": FLASH 0:"
```

```
PLAY AGAIN":AT 5,3:"SCORE "sc:
IF sc=hi THEN LET hi=sc
3010 PAUSE 0: PAUSE 0: GO TO 10
3500 IF sc=hi THEN LET hi=sc
3510 RETURN
```

```
4500 FOR f=0 TO 1: PLOT 0,87: D
RAW OVER 1: INK 3:y#84,(21-x)#8
-87+4: DRAW OVER 1: INK 3:255-y#
0-4,-((21-x)#8-87-4): NEXT f
4510 RETURN
```

```
5000 GO SUB 1000: FOR n=0 TO 3:
FOR f=0 TO 7: PRINT AT 3,3: INK
f:"ASTEROIDS ASTEROIDS ASTEROID
S P.8. NEWBY 1983 " BEE
P .01,RND*100-50: NEXT f: NEXT n
5010 PRINT: PRINT INK 9:TAB 3:
PRESS ANY KEY: PAUSE 0: PAUSE 0
BEEP .5,10: BEEP .5,-10
```

```
5020 GO SUB 1000: PRINT AT 3,1:"
KEYS 5-MOVE 5-SIGHTS LEFT
6- DOWN
7- UP
0- RIGHT
```

```
0-FIRE USE CAPS FOR ACCURACY
MOVE YOUR SIGHTS(X) ONTO THE
EDGE OF AN ASTEROID AND THEN
FIRE AT IT. ASTEROIDS WEAK
```

```
POINTS ARE ON THEIR EDGES AND
CAN ONLY BE SHOT THERE. AFTER
CROSSING THE ASTEROID BELT YOU
PRESS ANY KEY " PAUSE 0: P
AUSE 0: GO SUB 1000
```

```
5030 BEEP .5,10: BEEP .5,-10: PR
INT AT 3,1:"...ARRIVE AT YOUR HOM
E PLANET AND THE END OF THE G
AME BUT
THE ASTEROIDS ARE VE
DANGEROUS AND YOU CA
ONLY 6 HITS ON YOUR
N STAND
SHIP
THE "LRS" TELLS YOU
ASTEROIDS DISTANCE A
ND THE
SCORE IS ALSO CALCUL
ATED FROM
THIS.
```

```
GOOD LUCK
PRESS ANY KEY":
PAUSE 0: BEEP .5,10: BE
EP .5,-10: RETURN
```

```
5990 STOP
5999 RETURN
```

```
9000 FOR f=USR "a" TO USR "h"+7
9001 READ a: POKE f,a: NEXT f
9010 DATA BIN 11100000,BIN 11100
00,BIN 11110000,255,255,255,255,
BIN 11110000
```

```
9011 DATA 0,0,0,BIN 11110000,BIN
11000,BIN 11001100,255,0
```

```
9012 DATA BIN 111100,BIN 1010100
,BIN 01010101,BIN 10101010,BIN 0
1010101,BIN 10101010,BIN 0101010
,BIN 111100
```

```
9013 DATA RND*255,RND*255,RND*25
5,RND*255,RND*255,RND*255,RND*25
5,RND*255
```

```
9014 DATA 1,3,7,15,31,63,127,255
9015 DATA 128,128+64,128+64+32,1
28+64+32+16,128+64+32+16+8,PEEK
```

```
(USR "h")+4,253,254
9016 DATA 0,0,1,6,11,5,2,0
```

```
9017 DATA 128,64,128+32,64+16,12
8+32,64,128,0
```

```
9018 DATA 0
9999 RETURN
```

Can you rise from the void  
to meet the challenge of the

# Maziacs

## HAIL THE HERO

The most ingeniously animated little fellow ever seen on a Spectrum screen. Running in all directions fighting, blinking, tapping his feet and sitting down for a well earned rest.

## MEET THE MAZIACS

Correction! DON'T meet the Maziacs. Herds of nasty spidery beetly things with long hairy legs and lethal jaws.

## MANAGE THE MAZE

And what a maze - Full of Maziacs. Food, Swords, Prisoners, and a endless succession of dead ends and false trails. But don't despair - you have lots of help in your search for a single box of treasure buried deep in the maze of heavily defended passageways.

## NOBBLE THE NASTIES

A top Hollywood stunt man was specially flown in to stage the numerous fight sequences needed to defeat the evil guardians of the treasure.

## HEAD FOR HOME

Face a return journey with a burden of treasure and unable to carry a sword.

## FEATURES

MACHINE CODED COLOURFUL HIGH RES GRAPHICS - PAGE SELECT INSTRUCTIONS - INFORMATION, KEY CHANGE OPTIONS AT ANY STAGE - EVEN DURING A GAME - KEMPSTON/TYPE JOYSTICK OPTION - LEVELS OF DIFFICULTY OPTION - STRATEGY PLANNING VIEWS OF MAZE DURING THE GAME - COMPLETELY NEW RANDOM MAZE FOR EVERY GAME

This game must be  
seen to be believed.  
One of the best uses  
of Spectrum in all  
aspects that I have seen.

HOME COMPUTING WEEKLY  
27 SEPTEMBER 1983

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# dktronics



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BUY OUR DUAL INTERFACE FOR  
JUST £13.95 inc.

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- ★ Compatible with any software that list the Kempston Joystick.
- ★ Compatible with any software that uses cursor keys.
- ★ Compatible with most Pison/Melbourne House games e.g. Terror Daktili, Horace Goes Ski-ing etc.
- ★ Allows the use of Atari/Le Stick type joystick.
- ★ Eight directions can be programmed in simple basic.
- ★ Free draw programme and full instructions supplied.

### STANDARD INTERFACE FEATURES

Same as Dual Interface

- ★ But only compatible with any software that lists the Kempston Joystick

### ZX-81/SPECTRUM

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August '83 **£9.95 inc**

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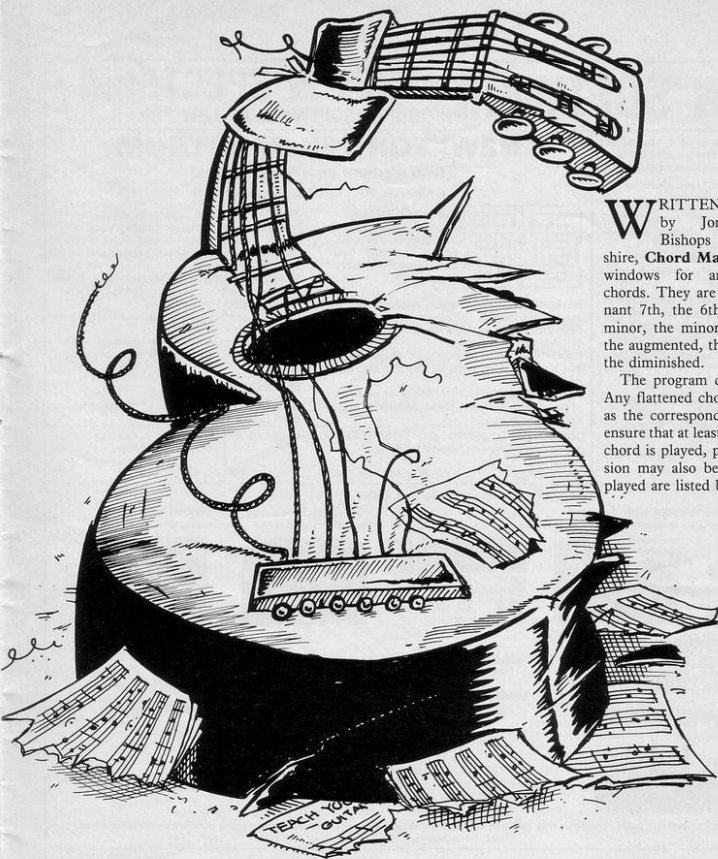
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# CHORD MASTER

```

10 REM **SET STRING VARIABLES
AND PRINT INSTRUCTIONS *****
*
20 GOSUB 1000
30 REM **PRINT CHORD WINDOW**
40 GOSUB 990
50 REM **SET CAPO POSITION (C)
**
60 GOSUB 800
70 REM **INPUT OF CHORD **
80 GOSUB 670
90 REM **EVALUATE P# TO GIVE C
HORD**
100 GOSUB 480
110 REM **INSERT FINGER POSITIO
NS**
120 GOSUB 260
130 REM **CLEAR CHORD WINDOW**
140 GOSUB 170
150 IF S#="M" THEN GOTO 50
160 GOTO 70
170 REM **CLEAR CHORD WINDOW**
180 FOR J=1 TO 11
190 IF C=0 OR S#="M" THEN PRINT
AT J,2;" "
200 IF C>0 AND S#="N" THEN PRIN
T AT J,2;"(C*%h)"
210 NEXT J
220 GOSUB 990
230 PRINT AT 16,0;R#
240 IF S#="M" THEN PRINT AT 14,
0;R#
250 RETURN
260 REM **INSERT FINGER POSITIO
NS**
270 FOR J=1 TO 6
280 IF J=1 OR J=6 THEN LET K#="E
$(C*2+1 TO 36)
290 IF J=2 THEN LET K#="B$(C*2+1
TO 36)
300 IF J=3 THEN LET K#="G$(C*2+1
TO 36)
310 IF J=4 THEN LET K#="D$(C*2+1
TO 36)
320 IF J=5 THEN LET K#="A$(C*2+1
TO 36)
330 FOR I=1 TO 36-(K*2 STEP 2
340 IF C$(1)=K$(1 TO I+1) OR C$(
(2)=K$(1 TO I+1) OR C$(3)=K$(1 T
O I+1) OR C$(4)=K$(1 TO I+1) THE
N GOSUB 420
350 NEXT I
360 NEXT J
370 PRINT AT 10,6;"FOR NEXT CHO
RD INPUT ""N""""AT 20,0;"TO MOVE
CAPO INPUT ""M""""
380 INPUT S#
390 IF S#="N" OR S#="M" THEN GO
TO 410
400 GOTO 380
410 PRINT AT 19,6;P#AT 20,0;R#
420 RETURN
430 REM **PRINT DOTS**
440 PRINT AT (J*2-1),(I*2+1);"0
"
450 IF (I*2+1)<=0 THEN GOTO 470
460 LET I=36-C*2
470 RETURN
480 REM **EVALUATE P**
490 FOR J=1 TO 12
500 IF X=0 THEN IF N$(J,1)=W$(1
) THEN GOTO 530
510 IF X=4 THEN IF N$(J)=W$(1 T
O 2) THEN GOTO 530
520 NEXT J
530 DIM C$(4,2)
540 LET C$(1)=N$(J)
550 IF P$(1)="R" THEN LET C$(2)
=N$(J+4)
560 IF P$(1)="B" THEN LET C$(2)

```



**W**RITTEN for the 16K ZX-81 by Jon McNamara of Bishops Stortford, Hertfordshire, **Chord Master** will draw chord windows for around 1,000 guitar chords. They are the major, the dominant 7th, the 6th, the major 7th, the minor, the minor 7th, the minor 6th, the augmented, the augmented 7th and the diminished.

The program does not handle flats. Any flattened chord should be entered as the corresponding sharp chord. To ensure that at least one inversion of each chord is played, part of a second inversion may also be shown. Notes to be played are listed beneath the window.

```
=N$(J+3)
570 IF P$(2)="C" THEN LET C$(3)
=N$(J+7)
580 IF P$(2)="D" THEN LET C$(3)
=N$(J+8)
590 IF P$(2)="E" THEN LET C$(3)
=N$(J+6)
600 IF P$(3)="F" THEN LET C$(4)
=N$(J+10)
610 IF P$(3)="G" THEN LET C$(4)
=N$(J+9)
620 IF P$(3)="H" THEN LET C$(4)
=N$(J+11)
630 REM **PRINT CHORD NOTES**
640 PRINT AT 19,0;R$
650 PRINT AT 16,4;W$;"... "C
$(1);";"C$(2);";"C$(3);";"C$(
4)
660 RETURN
670 REM **INPUT OF CHORD**
```

```
680 PRINT AT 19,0;"PLEASE INPUT
CHORD NAME..."
690 INPUT W$
700 IF W$="" " THEN GOTO 6
90
710 PRINT AT 19,0;R$
720 REM ** SET P$ AS NOTE POINT
ER**
730 LET P$="AC "
740 LET X=3
750 IF W$(2)="*" THEN LET X=4
760 FOR J=1 TO 7
770 IF W$(J)="M" THEN LET P$(1)
="B"
780 IF W$(J)="7" THEN LET P$(3)
="F"
790 IF W$(J)="6" THEN LET P$(3)
="G"
800 IF J+2>7 THEN GOTO 840
810 IF W$(J TO J+2)="AUG" THEN
```



# ORWIN SOFTWARE: ZX81 & SPECTRUM

SUPER SOFTWARE AT LOW PRICES

"Michael Orwin has built a reputation for value-for-money software and his Cassette 4 offers quantity as well as quality."

Sinclair User, October '82

"If each game was on a separate tape and selling for £5 each I would still recommend them. But all on one for £5 ...! This sort of value for money just has not been seen before on any personal computer."

"Without sounding pushy I would like to conclude this review by saying - if you have a ZX-81 and like games, then you should buy Michael Orwin's cassette 4."

2 extracts from ZX Computing, Oct/Nov '82

"Eight games, including an excellent version of the Scramble arcade game ... Easy to operate, graphically impressive and good value for money."

The Times, Saturday 11th December 1982 (about Cassette 4)

## NEW! FOR 16K SPECTRUM

(will also run on 48K Spectrum)

CASSETTE A

Ten programs for £6



**GHOST GOBBLER**  
Eat the ghosts before the ghosts eat you. Eat a star and you can chase the ghosts for a while.

**ALIENKILL** Control lasers, rockets and a force-field to stop the aliens from landing.  
**MOUSETRAP** Trap the mouse in the corner but not anywhere else.

**REVERSI** A game of skill with simple rules but sophisticated tactics. Play against the computer.  
**LASER DEFENCE** Control the laser sight to shoot down the alien ships. Machine code sound routines.

**CASSETTE 1**, eleven programs (including 7 in machine code) for 1K ZX81 £3.80

**CASSETTE 2**, ten games in Basic for 16K ZX81 £5

**CASSETTE 3**, eight programs (including 1 in machine code) for 16K ZX81 £5

**CASSETTE 4** 8 games for 16k ZX81 £6

**ZX-SCRAMBLE** (machine code) with 3 stages.  
Bomb and shoot your way through the fortified caves.



**FUNGALOID**  
THE FUNGALOID ARE GROWING AND WHEN THEY REACH THE SKY THEY PRODUCE DEADLY SPORES YOU MUST CONTROL A FLYER AND YOUR MISSION IS TO DESTROY THE FUNGALOID BY SHOOTING ANTI-FUNGUS BOMBS ON THEM.



**GALAXY INVADERS** (machine code)  
Fleets of swooping and diving alien craft to fight off.

**SNAKEBITE** (machine code)  
Eat the snake before it eats you. Variable speed. (very fast at top speed).

**LIFE** (machine code)  
A ZX81 version of the well known game.

**3D TIC-TAC-TOE** (Basic)  
Played on a 4 x 4 x 4 board, this is a game for the brain. It is very hard to beat the computer at it.

7 of the 8 games are in machine code, because this is much faster than Basic. (Some of these games were previously available from J. Steadman).

**CASSETTE 5** 8 games for 16k ZX81 £6

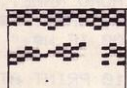
**BYTE-MAN** (machine code)  
(previously available from Mindseye)



**SPACE RESCUE** (machine code)  
(previously available from Mindseye)



**BREAKOUT** (machine code)



**BLITZ** (machine code)



**PLANETOID** (machine code)  
Rotate, move, fire and hyperspace controls. Wide range of choice of speed and difficulty.

**DODGEMS** (machine code)  
Dodge the computer's car while eating the dots.

**DRAUGHTS** (machine code)  
Three skill levels.

**MERCHANT** (Basic)  
Make your fortune on trading voyages in the Mediterranean and beyond.

7 of the 8 games are in machine code because it is much faster than Basic.

"New polish on old favourites ... the quality of the software and the smooth action displays created on the screen make the programs worthwhile for anyone who has a ZX-81 and plays games using it. Most of the games include well-presented instructions which make them easier to play. It is pleasant to see that Orwin's kind of quality is available again."

From review of Cassette 5 in Sinclair User, September 1983.



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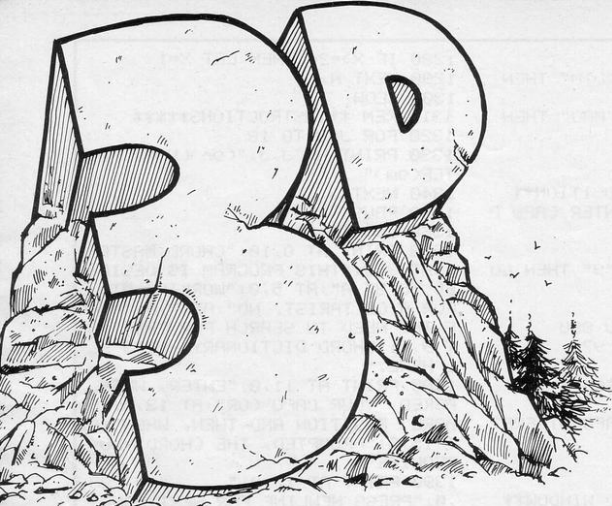
LET P$(2)="["
820 IF W$(J TO J+2)="DIM" THEN
LET P$="BEG"
830 IF W$(J TO J+2)="MAJ" THEN
LET P$="ACH"
840 NEXT J
850 RETURN
860 REM **SET CAPO POSITION**
870 PRINT AT 19,0;"ENTER CAPO P
OSITION (0 TO 12)"
880 INPUT Q$
890 IF Q$="0" OR Q$="9" THEN GO
TO 880
900 LET C=VAL Q$
910 IF C>12 THEN GOTO 880
920 IF C=0 THEN GOTO 970
930 FOR J=1 TO 11
940 PRINT AT J,2;"(2*9H)"
950 NEXT J
960 PRINT AT 14,5;"CAPO AT FRET
";C
970 PRINT AT 19,0;R$
980 RETURN
990 REM **PRINT CHORD WINDOW**
1000 LET S=1
1010 FOR J=1 TO 12 STEP 2
1020 PRINT AT J,1;X$(S);AT J,4;Y
$
1030 PRINT AT J+1,4;Z$
1040 LET S=S+1
1050 NEXT J
1060 PRINT AT 12,0;R$
1070 RETURN
1080 REM **SET STRING VARIABLES*
*
1090 LET X$="EBGDGE"
1100 LET Y$="(98)---(98)---(98)---
---(98)---(98)---(98)---(98)"
1110 LET Z$="(98) (98) (98)
(98) (98) (98) (98)"
1120 LET V$="A A*B C C*D D*E F F
*G G*"
1130 LET A$="A A*B C C*D D*E F F
*G G*A A*B C C*D "
1140 LET B$="B C C*D D*E F F*G G
*A A*B C C*D D*E "
1150 LET D$="D D*E F F*G G*A A*B
C C*D D*E F F*G "
1160 LET E$="E F F*G G*A A*B C C
*D D*E F F*G G*A "
1170 LET G$="G G*A A*B C C*D D*E
F F*G G*A A*B C "
1180 LET R$="
"
1190 REM **DIMENSION ARRAYS**
1200 DIM N$(36,2)
1210 DIM W$(7)
1220 REM **SET UP N**
1230 FAST
1240 LET X=1
1250 FOR N=1 TO 36
1260 LET N$(N)=V$(X TO X+1)
1270 LET X=X+2

```

```

1280 IF X>=24 THEN LET X=1
1290 NEXT N
1300 SLOW
1310 REM **INSTRUCTIONS*****
1320 FOR J=0 TO 18
1330 PRINT AT J,J;"(CH)CHORD MAS
TER(9H)"
1340 NEXT J
1350 PAUSE 250
1360 CLS
1370 PRINT AT 0,10;"CHORD MASTER
";AT 3,0;"THIS PROGRAM IS DESIGN
ED TO BE A";AT 5,0;"WORKING AID
FOR A GUITARIST. NO";AT 7,0;"MOR
E THE NEED TO SEARCH FOR THE ";A
T 9,0;"CHORD DICTIONARY - ITS AL
L HERE."
1380 PRINT AT 11,0;"ENTER, WHEN
ASKED, YOUR CAPO (OR)";AT 13,0;"B
ARRE) POSITION AND THEN, WHEN";A
T 15,0;"PROMPTED, THE CHORD YOU
REQUIRE"
1390 PRINT AT 17,0;".....";AT 20
,0;"PRESS NEWLINE FOR NEXT PAGE"
1400 PAUSE 4E4
1410 CLS
1420 PRINT AT 2,0;"FINGER POSITI
ONS ON A NORMAL";AT 4,0;"CHORD
WINDOW" WILL INDICATE THE";AT
6,0;"WAY IN WHICH THE CHORDS CAN
BE"
1430 PRINT AT 8,0;"FORMED. SOME
SELECTION WILL BE";AT 10,0;"NEED
ED TO FORM PLAYABLE CHORDS";AT 1
2,0;"SINCE, AT TIMES, MORE THAN
ONE";AT 14,0;"INVERSION MAY BE O
N DISPLAY AT";AT 16,0;"THE SAME
TIME ....."
1440 PRINT AT 20,0;"PRESS NEWLIN
E FOR THE NEXT PAGE"
1450 PAUSE 4E4
1460 CLS
1470 PRINT AT 2,0;"ACCEPTABLE CH
ORDS ARE :-";AT 4,0;"X, X7, X6,
X MIN (OR XM), XM7,";AT 6,0;"XM6
, X MAJ7, X AUG, X AUG7 AND";AT
8,0;"X DIM ... WHERE "X" IS TH
E ROOT"
1480 PRINT AT 10,0;"OF THE CHORD
, ";AT 12,0;"THE PROGRAM IS LIMIT
ED TO INPUTS";AT 14,0;"CONTAINI
NG SHARPS (IE ""*"" ) ONLY"
1490 PRINT AT 16,0;"THUS- FOR EX
AMPLE B FLAT MUST BE";AT 18,0;"E
NTERED AS ""A*""(IE ""A""SHARP)"
1500 PRINT AT 20,0;"PRESS NEWLIN
E TO START"
1510 PAUSE 4E4
1520 CLS
1530 RETURN
1540 STOP
1550 SAVE "CHORD MASTER"
1560 RUN

```



## 3-D LETTERS

**T**HREE-DIMENSIONAL LETTERS, written for the Spectrum by P Monger of Reading, Berkshire draws large, three-dimensional letters on the screen. Only seven letters can be printed at once but the routine can be used again several times without clearing the screen, allowing impressive title pages to be created.

```

10 BORDER 7: INK 0: PAPER 7
20 LET a$="3D-WORD": LET p=30
30 PRINT AT 10,7:"© 1983 P.Mon
ger"
40 PRINT PAPER 1: INK 7:AT 13,
0:" Now you can write your own
3D words
"
50 PRINT "PAPER 0: INK 7:" M
w Please follow the prompts. "
60 PRINT INK 7: PAPER 2: FLASH
1:AT 21,10:"Press any key"
70 PAUSE 0: CLS
80 INPUT "Pixels from top ( ( i
sp)=0 Pixels):"p
90 INPUT "letters (7 max):"a$
IF LEN a$>7 OR LEN a$<1 THEN B
EEP 1,-30: GO TO 90
100 LET s=LEN a$: PRINT INK 7:A
T 21,0:a$
110 FOR f=0 TO s-1: FOR n=0 T
O 7
120 IF POINT (f,n)=0 THEN GO TO
160
130 PLOT f*4,n*4+135-p: DRAW 4,
0: DRAW 0,4: DRAW -4,0: DRAW 0,-
3: DRAW 3,0: DRAW 0,2: DRAW -2,0
: DRAW 0,-1: DRAW 2,0: DRAW -2,-
2
140 DRAW 5,5: DRAW 0,4: DRAW 0,
-4: DRAW 4,0: DRAW 0,4: DRAW 0,-
4: DRAW -5,5
150 DRAW 0,4: DRAW 5,5: DRAW -4
,0: DRAW -5,-5
160 NEXT n: NEXT f
170 IF a$="3D-WORD" THEN PAUSE
50: GO TO 40
180 INPUT "Write some more ? (y
/n) "j$
190 IF w="n" THEN STOP
200 INPUT "Clear the screen ? (
y/n) "j$
210 IF c="y" THEN CLS
220 GO TO 60

```

```

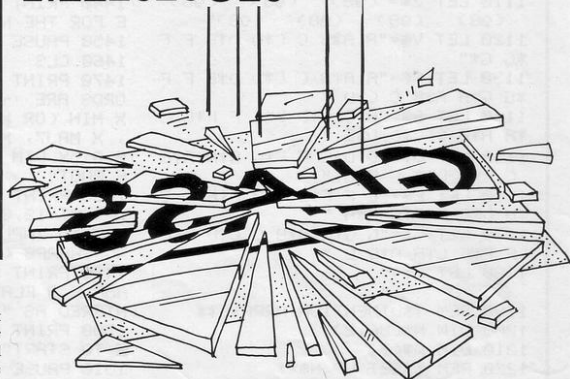
100 CLEAR 5000
110 LET ST="(234*256)" PRINT AT
0,10:"POKE LEFT "
120 FOR I=15616 TO 15616+255*2
130 LET A$="" POKE 16384,PEEK
I
140 GO SUB 200
150 PRINT AT 10,10:15616+(255*I
-1)
160 POKE ST,VAL ("BIN "+A$)
170 LET ST=ST+1
180 NEXT I
190 POKE 23607,233: STOP
200 FOR J=7 TO 0 STEP -1: IF PO
INT (J/175)=1 THEN LET A$=A$+1
GO TO 220
210 LET A$=A$+"0"
220 NEXT J: RETURN
230 POKE 23607,233

```

**O**NCE THIS program is RUN it will reverse the entire character set, excluding user-defined graphics. The new character set can be called upon at any time, even after NEW has been pressed, by entering POKE 2307,233.

**Mirror Characters** was written for the 48K Spectrum by Graham Walkden of Banchory, Kincardineshire.

## MIRROR



## CHARACTERS



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Unfortunately an error was published in Softek's August Advertising. Softek does not guarantee a full refund should a program fail to load, however, it does guarantee a replacement cassette.

Dr T. Langdell  
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By Andrew Hewson and John Hardman. This book teaches the beginner all he needs to know in a simple, easy-to-learn form and its an invaluable reference work for the expert too! SECTION A: Three chapters explaining what you need to know about 280 machine code on the Spectrum. • How to load and save machine code. • How to use the system variables. • How memory is organised. • How program lines are stored. • How to use the stack, the display, the attribute files. • How to call ROM Routines - where they are and what routines. • How to call ROM Routines - where they are and what routines. SECTION B: 40 routines including. • Scroll - up, down, side to side by pixel or by character. • Search and replace, token swap, string search. • Rotate character, invert character - horizontally and vertically. • Line renumber - including GOSUBS, GOTOS, RUN etc.

they do. • The structure of 280 code - plus a valuable glossary. SECTION B: 40 routines including. • Scroll - up, down, side to side by pixel or by character. • Search and replace, token swap, string search. • Rotate character, invert character - horizontally and vertically. • Line renumber - including GOSUBS, GOTOS, RUN etc.

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By Andrew Hewson. Program titles include: MACHINE CODE EDITOR - Write, modify, extend and load machine code using this all-basic program. No need to use an Assembler when you have this program! INDEX FILE - Learn about fixed length records, save numeric and string information, add to, sort, modify, delete and print your records. Ideal as a computer based filing system. DUCKSHOOT - Learn how to manipulate the attributes file and have fun at the same time. GRAPHIX - Construct up to 210 graphics characters with the full on-screen editing facilities, enhance and modify them and recall them later to build a detailed display to save on cassette. SPIROMANIA - A program to stretch your artistic talents, imagination and ingenuity. Draws a limitless variety of curves and spirals. Plus: FOOTBALL, DIGITISER, DIARY and many more.

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SP11

## MAZEMAN For the LYNX....



**SPECTROID STORM:** A fast action graphic space game. You dodge asteroids and zap aliens in this cosmic battle for the stars. There are bonus points to be scored for the sharp shooter with the speedy ship. The whole of hyper-space lies waiting for you when you pile on the super thrust.

Spectrum £4.45

**NEW**

**FORTH:** A full implementation allowing the full range of sound and colour. The only Spectrum package endorsed by the Forth Interest Group and the one used by Sinclair User in their series on Forth. '... well worth the price ... for a speedier Spectrum' *Personal Computer*...

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**INVADERS:** Very fast m/c action. Includes mystery ship and increasingly difficult screens.

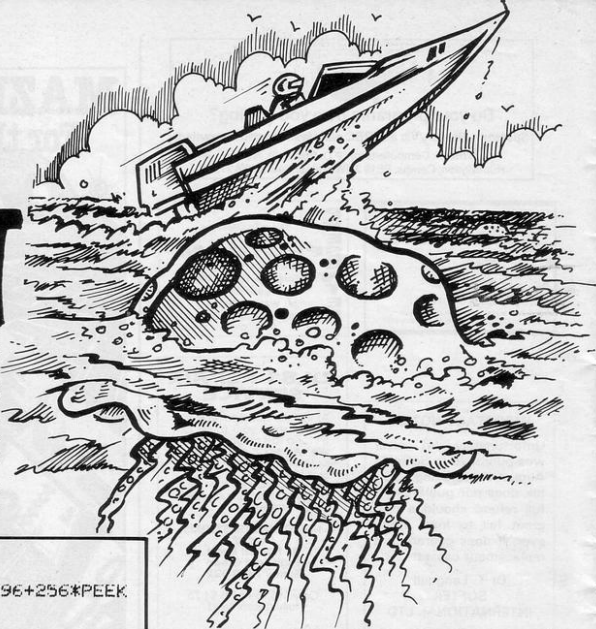
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# JET BOAT



PICK-UP the jellyfish by steering your boat across them, using keys 5, 6, 7 and 8. Hitting your wake, the beach at the edge of the sea, or the black islands will cause you to die. When you complete a screen your score will be shown. Press any key to begin the next screen.

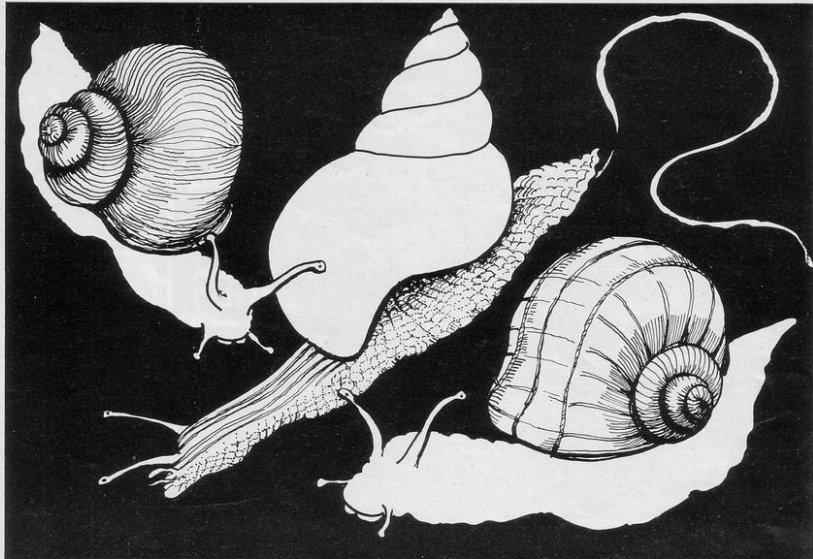
Jet Boat was written for the 16K ZX-81 by Jonathan Currey of south-east London.

```

2 POKE 16533,0
3 LET HT=0
10 LET DF=(PEEK 16396+256*PEEK
16397)
14 LET E=0
15 PRINT TAB 4;"PRESS ANY KEY
TO START."
16 IF INKEY$="" THEN GOTO 16
17 FAST
18 LET T=0
19 LET N=INT (RND*5)+10
20 PRINT AT 0,0;"(32*15P)"
25 FOR I=1 TO 20
30 PRINT "(15P)"
    (15P)
35 NEXT I
43 PRINT "(32*15P)"
45 PRINT AT 21,6;"best scoreL"
)HT
46 FOR I=1 TO N+INT (D/10)
47 PRINT AT INT (RND*19)+1,INT
(RND*29)+1;"(15P)"
48 NEXT I
49 SLOW
50 FOR I=1 TO N
55 PRINT AT INT (RND*19)+1,INT
(RND*29)+1)
56 IF PEEK (PEEK 16398+256*PEE
K 16399)=23 THEN GOTO 55
57 PRINT "*"
60 NEXT I
80 LET P=DF+(33*19+31)
100 LET D=-33
141 IF INKEY$="5" THEN LET D=-1
142 IF INKEY$="6" THEN LET D=33
143 IF INKEY$="7" THEN LET D=-3
3
144 IF INKEY$="8" THEN LET D=1
145 IF PEEK (P+D)=23 THEN GOTO
300
150 IF PEEK (P+D)<0 THEN GOTO
200
160 LET P=P+D
170 POKE P,136
180 GOTO 110
200 LET H=PEEK (P+D)
201 CLS
202 LET E=E+T
203 PRINT AT 6,0;"YOU CRASHED I
NTO ";( "A BLOCK." AND H=128);("Y
OUR TRAIL." AND H=136)
205 IF E>HT THEN PRINT AT 8,3;"
WELL DONE,A NEW HIGH SCORE"
210 IF E>HT THEN LET HT=E
220 PRINT AT 10,5;"YOU GOBBLED
";E;" FISH "
230 GOTO 14
300 LET T=T+1
305 IF T=N THEN GOTO 400
310 GOTO 160
400 POKE P+D,136
401 CLS
405 LET E=E+T
410 PRINT AT 8,0;"YOU HAVE NOW
GOBBLED ";E;" FISH"
415 PRINT "TRY A SLIGHTLY HARDE
R SCREEN."
417 PRINT ,,,,
420 GOTO 15

```





THERE HAVE been requests for two-player games. William Hoyland of Surbiton, Surrey has supplied one such game for the 16K ZX-81.

Player one attempts to move the snail

from the left of the screen to the right, while the snail of player two attempts to cross from right to left.

Both players must avoid the deadly slug pellets and the slimy snail trail of the other.

## SNAIL TRAIL

```
15 GOSUB 5000
20 LET A=10
30 LET B=10
40 LET S1=0
50 LET S2=0
60 DIM A$(20,30)
70 FOR Z=1 TO 39:91+32
80 LET X=INT (RND*19)+1
90 LET Y=INT (RND*20)+5
100 PRINT AT X,Y,"(91)"
110 LET A$(X,Y)="(91)"
120 NEXT Z
130 LET D=1
140 LET E=30
150 PRINT AT A,D,"O"
155 PRINT AT B,E,"X"
160 LET A$(A,D)="O"
165 LET A$(B,E)="X"
170 LET C=PEEK 16421
180 LET B=B-(C=223 OR C=219 OR C=221) AND B-1>0)<(C=191 OR C=187 OR C=189) AND B+1<21)
190 LET A=A-(C=251 OR C=219 OR C=187) AND A-1>0)<(C=253 OR C=221 OR C=189) AND A+1<21)
200 LET D=D+1
210 LET E=E-1
215 IF D=31 THEN GOTO 3000
217 IF A$(A,D)<>" " AND A$(B,E)<>" " THEN GOTO 3000
220 IF A$(A,D)<>" " THEN GOTO 1
220 IF A$(B,E)<>" " THEN GOTO 2
230 IF A$(B,E)<>" " THEN GOTO 2
240 PRINT AT A,D,">"
250 PRINT AT B,E,"<"
260 GOTO 150
1000 FOR Z=1 TO 20
1010 PRINT AT A,D,"<1>"
1020 PRINT AT A,D,">"
1030 NEXT Z
1035 CLS
```

```
1040 PRINT "THE GOOD LOOKING ONE
ON THE RIGHT WINS."
1050 LET S2=S2+1
1070 PRINT "<--";S1;TAB 29-LEN (STR$ S2);S2;"-->"
1075 IF S2=10 THEN GOTO 6000
1077 PRINT AT 10,10;"TOUCH A KEY"
1080 IF INKEY="" THEN GOTO 1000
1090 CLS
1100 GOTO 60
2000 FOR Z=1 TO 20
2010 PRINT AT B,E,"<1>"
2020 NEXT Z
2040 CLS
2050 PRINT "THE GOOD LOOKING ONE
ON THE LEFT WINS."
2060 LET S1=S1+1
2070 PRINT "<--";S1;TAB 29-LEN (STR$ S2);S2;"-->"
2075 IF S1=10 THEN GOTO 6000
2077 PRINT AT 10,10;"TOUCH A KEY"
2080 IF INKEY="" THEN GOTO 2000
2090 CLS
2100 GOTO 60
3000 CLS
3010 PRINT TAB 6;"NOBODY WINS GE
EKS"
3020 GOTO 2070
4000 SAVE "SNAIL TRAIL"
4010 RUN
5000 LET B$="**TOUCH*AKKEY*****
*****HI. THE FOLLOWING
GAME IS CALLED SNAIL TRAIL AND I
T REQUIRES TWO PLAYERS TO NAVIGA
TE THEIR SPEEDY SNAILS ACROSS AN
AREA OF LETHAL SLUG PELLETS WHI
LEST AVOIDING THEIR OPPONENTS DEA
DLY TRAILS.PLAYER ONE USES THE K
EYS Q AND A TO MOVE UP AND DOWN.
```

PLAYER TWO USES KEYS O AND L.\*\*\*
\*\*\*\*\*GOOD LUCK\*\*\*\*

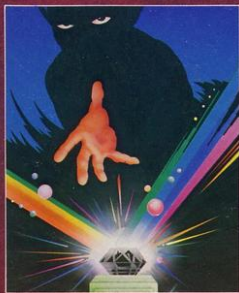
```
5010 PRINT AT 9,7;"(98:16*99:95)
";AT 10,7;"(98)**TOUCH*AKKEY***
(95)";AT 11,7;"(98:16*95)"
```

```
5020 IF INKEY="" THEN GOTO 5020
5030 FOR A=1 TO LEN B$-15
5040 PRINT AT 10,8;B$(A TO A+15)
5050 FOR B=1 TO 3
5060 NEXT B
5070 NEXT A
5080 FOR A=1 TO 100
5090 NEXT A
5100 CLS
5110 RETURN
6000 PRINT
6010 PRINT "AND THE OVERALL WINN
ER,"
6020 PRINT "WITH AN INCREDIBLE L
EAD OF "
```

```
6030 IF S1>S2 THEN PRINT S1-S2
6040 IF S2>S1 THEN PRINT S2-S1
6050 PRINT
6060 PRINT "IS..."
6070 PRINT
6080 PRINT "THE DEVILISHLY FIEND
ISH..."
6090 PRINT
```

```
6100 IF S2>S1 THEN PRINT "PLAYER
ON THE RIGHT"
6110 IF S1>S2 THEN PRINT "PLAYER
ON THE LEFT"
6120 PRINT
6130 PRINT " TOUCH A KEY TO PL
AY AGAIN"
6140 IF INKEY="" THEN GOTO 6140
6150 CLS
6160 RUN
```

# JUST AROUND THE CORNER, A NEW



**BLACK CRYSTAL**

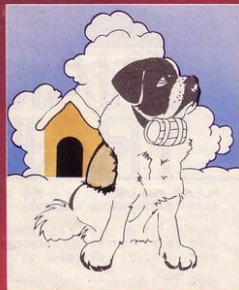
The Classic, six program adventure game for the 48K Spectrum and 16K ZX-81 computers. No software collection is complete without it.

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written by Stephen Renton

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**STARFORCE ONE**

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(100% MACHINE CODE ARCADE ACTION)



**THE DEVIL RIDES IN**

I uttered the last incantations as the clock struck thirteen. All fell silent except for a faint rustling in the corner. From out of the shadows they came, all Hell's fury against me but I was not defenceless until the Angel Of Death, astride a winged horse, joined the battle. Avoiding his bolts of hell fire, I took careful aim. My chances were slim, but if my luck held . . . 48K Spectrum £5.95.

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# HEAT-LOSS CALCULATIONS

**H**HEAT-LOSS CALCULATION, written by M K Payne of north London for the 16K ZX-81, can be used to produce an accurate heating requirement for a room, area or complete property. You are asked to input the name of a structure, its length, width, height, area or volume, air changes, "U" value and the difference in temperature between one side and the other in Centigrade.

The heat loss in watts will then be calculated. For example, a window of one metre by two metres, with a "U" value of 5.6 and temperatures of minus one on the outside and 21.1 on the inside would produce a heat loss of 247.5 watts. A reference list of "U" values is included in the program.



```

5 FAST
10 LET LN=3
20 LET AV=0
30 LET HL=0
40 LET THL=0
50 LET T=0
100 LET A$="ST LEN MID HEI AR/
  A U TO LUSS"
110 LET B$="RE CTH TH GHT VOL
  C VHL (92 C CW)"
200 PRINT AT 0.11;"HEAT LOSSES"
210 PRINT TAB 11;"(11*97)"
220 PRINT "INSTRUCTIONS"
230 PRINT
240 PRINT "ENTER STRUCTURE REF
  ERENCE IN NUMORE THAN TWO LETTER
  S-FIGURES"
250 PAUSE 250
260 PRINT
270 PRINT "ENTER MEASUREMENT O
  F 1METRE FORLENGTH/WIDTH/HEIGHT
  EVEN WHEN NOT OTHERWISE APPLIC
  ABLE"
280 PAUSE 300
290 PRINT
300 PRINT "ENTER 1 FOR A/C/H W
  HEN INPUT ISFOR STRUCTURE"
310 PAUSE 250
320 PRINT
330 PRINT "WHEN A ROOM OR AREA

```

```

HAS BEEN FULLY ENTERED, INPUT
"DONE" TO OBTAIN HEAT LUSS S
UB-TOTAL"
340 PAUSE 300
345 PRINT
350 PRINT "WHEN COMPLETE STRUCT
  URE ENTERED,INPUT "FINISHED" T
  O OBTAIN HEAT LUSS TOTAL."
360 PAUSE 300
370 PRINT "KEY U FOR "U" VALU
  ES OR R TO RUN"
380 PAUSE 4E4
390 IF INKEY$="U" THEN GOSUB 19
  00
395 CLS
500 PRINT AT 0.0;A$
510 PRINT B$
520 PRINT "
600 PRINT AT 21.0;"INPUT STRUCT
  URE.
610 INPUT S$.
615 IF S$="DONE" THEN GOTO 1000
616 IF S$="FINISHED" THEN GOTO
  2000
620 PRINT AT 21.0;"INPUT LENGTH
  IN METRES"
630 INPUT L.
640 PRINT AT 21.0;"INPUT WIDTH
  IN METRES"

```

```

650 INPUT W.
660 PRINT AT 21.0;"INPUT HEIGHT
  IN METRES"
670 INPUT H.
680 LET AV=L*W*H
690 PRINT AT 21.0;"INPUT A/C/H
  "
700 INPUT V.
710 PRINT AT 21.0;"INPUT U VALU
  E"
720 INPUT U.
730 PRINT AT 21.0;"INPUT TEMP.
  IN C (- IF GRIN)"
740 INPUT C.
745 PRINT AT 21.0;"
760 LET HL=INT (AV*V*U*U*5)
770 PRINT AT LN.0;S$:TAB 3;L:AT
  LN.7;W:AT LN.11;H:AT LN.15;AV:A
  T LN.19;V:AT LN.21;U:AT LN.25;C:
  AT LN.28;HL
900 LET LN=LN+1
910 IF LN:19 THEN SCROLL
920 IF LN:19 THEN LET LN=19
940 LET THL=THL+HL
950 GOTO 500
1000 PRINT AT LN.10;"SUB-TOTAL "
  :THL
1005 PRINT AT 21.0;"

```



```

1010 LET LN=LN+1
1020 IF LN>19 THEN SCROLL
1030 IF LN>19 THEN LET LN=19
1040 LET T=T+THL
1050 LET THL=0
1060 GOTO 500
1900 CLS
1905 LET UB="      U VALU
ES (W/M2C)      CONSTRUCTION
SHD MOR SEWINDOW-SINGLE(WOOD)
  4.0 4.3 5.0      -SINGLE(METAL)
  5.0 5.6 6.7      -DOUBLE(WOOD)
  2.3 2.5 2.7      -DOUBLE(METAL)
  3.0 3.2 3.5 FLOOR-SOLID,GD,4 EX
P 1.47      -SOLID,GD,2 EX
P 1.07      -WOOD,GD,LIND
  1.05      -WOOD,GD,CARPE
T 0.99      ROOF-TILES,FELT,PL/
R 1.4 1.5 1.6      -R/A + BOARDING
  1.3 1.3 1.3      -R/A + GLASS FB
R 4.9 0.5 5.1 WALL-SLD, BRICK+PLST
R 2.0 2.1 2.2      -SLD, BRICK UNPL
D 2.2 2.3 2.4      -CAV, 250MM, PLST
R 1.4 1.5 1.6      -CAV, 375MM, PLST
R 1.2 1.2 1.2      -CONCRETE, PLSTR
D .95 .97 1.0      -CAV, PLST IN/OU
T .82 .84 .86 VENTILATION
  0.30
TO START"
1910 PRINT UB
1915 PAUSE 4E4
1920 RETURN
2000 PRINT AT 21,0;"TOTAL HEAT R
EQ. = "T;" WATTS"

```



# SILLY MOO

**C**HASE a bionic cow round the farmyard, using cursor keys 5 to 8. The cow is bionic and if she runs off the edge of the screen she will be teleported to another section of the farmyard. As you are not bionic you must avoid the edges of the screen. If

```

10 LET A=5
20 LET B=A
30 LET C=15
40 LET D=C
45 FOR T=0 TO 100
50 PRINT AT A,B;"(1)";AT C,D;
  "(1)";
60 LET C=C+(A<D)-(A>D)
70 LET D=D+(B<D)-(B>D)
80 IF INKEY$="8" THEN LET B=B+
2
90 IF INKEY$="5" THEN LET B=B-
2
100 IF INKEY$="6" THEN LET A=A+
2
110 IF INKEY$="7" THEN LET A=A-
2
120 IF C<0 OR C>20 THEN LET C=1
130 IF D<0 OR D>30 THEN LET D=1
140 IF A=C AND B=D THEN GOTO 20
140 CLS
150 NEXT T
160 PRINT AT C,D;"(1)MOO";AT A
  B;"(1)";
170 STOP
200 PRINT AT A,B;"GOT YOU"

```

you catch the cow you will be shown to shout "Got you" and if you fail to catch her she will laugh her head off.

**Silly Moo** was written for the 1K ZX-81 by Michael McRoberts and Kevin Fairclough of Wallasey, Merseyside.



# PETROL

**P**ETROL CONSUMPTION, written by A Briggs of Broms-grove, Worcestershire calculates and displays graphically vehicle fuel consumption on the ZX-81. Full instructions are included in the program. When you are asked for the cost of fuel, enter the amount of money spent when the tank was last filled.

```

W 5 GOSUB 3000
10 GOTO 4000
15 DIM N(56)
16 DIM E(56)
17 LET N=1
18 LET G=0
20 GOSUB 3000
25 CLS
30 PRINT TAB 10;C$;" MPG"
35 PRINT
40 PRINT TAB 1;"SPEEDO LAST FU
EL ";
45 REM M=SPEEDO LAST FUEL
50 PRINT TAB 24;M
55 PRINT TAB 1;"DATE THIS FUEL
1 ";
56 INPUT D$
57 PRINT AT 3,16;" ";TAB 24;D$
60 PRINT TAB 1;"SPEEDO THIS FU
EL ";
65 REM S=SPEEDO THIS FUEL
70 INPUT S
80 PRINT AT 4,18;" ";TAB 24;S
90 PRINT TAB 1;"GALS AFTER LAS
T FILLED";
95 REM G=TOTAL GALS TO LAST FI
LL
110 PRINT TAB 24;G
120 PRINT TAB 1;"COST OF FUEL,£
.P ";
125 REM C=COST OF FUEL £.P
130 INPUT C
140 PRINT AT 6,18;" ";TAB 24;C
150 PRINT TAB 1;"£.P PER GAL/LI
TRE ";
155 REM L=PRICE PER GAL/LITRE £
160 INPUT L
170 IF L<1 THEN LET L=INT (L/.2
2*1000+.5)/1000
180 PRINT AT 7,19;" ";TAB 24;L
190 LET G=G+INT (C/L*100+.5)/10
0
200 PRINT TAB 1;"TOTAL GALS TO
DATE";
210 PRINT TAB 24;G
220 LET X=INT ((S-M)/(C/L)*100+
.5)/100
230 PRINT TAB 1;"MPG, LAST FILL"
;
240 PRINT TAB 24;X
245 LET M=S
250 LET Y=INT ((S-M1)/G*100+.5)
/100
260 PRINT TAB 1;"OVERALL MPG";
270 PRINT TAB 24;Y
280 PRINT
290 FOR U=1 TO 150
295 IF INKEY$="H" THEN LET U=14
0
300 NEXT U

```

# CONSUMPTION

```

310 CLS
1010 PRINT AT 21,0;S1;"-----
-----";S1
1020 PRINT AT 16,0;S1+S;"-----
-----";S1+S
1030 PRINT AT 11,0;S1+10;"-----
-----";S1+10
1040 PRINT AT 6,0;S1+15;"-----
-----";S1+15
1050 PRINT AT 1,0;S1+20;"-----
-----";S1+20
1060 PRINT AT 0,7;C$;" OVERALL m
PG"
1065 PRINT AT 1,7;"REG NO ";R$
1070 PRINT AT 2,7;"INITIAL MILES
";M1
1080 PRINT AT 3,7;"CURRENT MILES
";S
1090 PRINT AT 4,7;P$;" TO ";D$
2000 LET E(N)=(((INT (Y+.5))-S1)
)*2
2010 IF E(N)>40 THEN LET E(N)=40
2012 IF E(N)<0 THEN LET E(N)=0
2015 FOR N=1 TO N
2020 FOR H=0 TO E(N)
2030 PLOT N+3,H
2035 NEXT H
2040 NEXT N
2100 FOR U=1 TO 200
2105 IF INKEY$="H" THEN LET U=19
0
2110 NEXT U
2120 CLS
2130 GOTO 8000
3010 CLS
3020 PRINT AT 5,0;"to HOLD DISPL
AY PRESS ""H""
3030 FOR U=1 TO 75
3040 NEXT U
3050 CLS
3060 RETURN
4000 PRINT "car overall Petrol c
onsumption"
4010 PRINT
4020 PRINT "``THIS PROGRAMME CAL
CULATES AND GRAPHICALLY DISPLAYS
A CARS OVER-ALL FUEL CONSUMPTIO
N TO THE NEAREST MPG,FOLLOWIN
G EACH FUEL PURCHASE."
4021 PRINT
4022 PRINT "``AFTER FIRST ENTERI
NG THE CAR DETAILS,IT IS ONLY N
ECESSARY TO INPUT THE DATE,SPEED

```

```

0,COST AND PRICE PER GALLON OR
LITRE AS PROMPTED"
4023 PRINT
4024 PRINT "``ALTHOUGH THE REGU
LS WILL IN ANY CASE GET PROGRES
SIVELY MORE ACCURATE IT IS BETTE
R TO FILL THE TANK,OR NEARLY 5
0,AT EACH PURCHASE TO ACHIEVE
THE MAXIMUM ACCURACY FROM THE ST
ART"
4030 FOR U=1 TO 300
4033 IF INKEY$="H" THEN LET U=20
0
4034 NEXT U
4035 CLS
4040 PRINT "INPUT CAR TYPE E.G."
"CAPRI""
4050 INPUT C$
4060 PRINT
4070 PRINT "INPUT REGISTRATION N
UMBER E.G.""TLT 512 M""
4080 INPUT R$
4090 PRINT
4100 PRINT "INPUT SPEEDOMETER RE
ADING OF INITIAL FUEL BOUGHT
E.G. 15500"
4110 INPUT M
4120 LET M1=M
4130 PRINT
4140 PRINT "INPUT DATE OF INITIA
L PURCHASE E.G. 24.12.81"
4150 INPUT P$
4160 PRINT
4170 PRINT "INPUT MINIMUM EXPECT
ED MPG FOR GRAPH BASE E.G. 20"
4180 INPUT S1
4190 GOTO 15
8020 CLS
8030 PRINT AT 5,0;"PRESS R FOR N
EXT CALCULATION"
8040 PRINT AT 7,0;"PRESS S TO SA
VE"
8060 IF INKEY$="R" THEN GOTO 25
8070 IF INKEY$="S" THEN GOTO 900
0
8080 FOR U=1 TO 5
8085 NEXT U
8090 IF INKEY$(<>)"R" OR INKEY$(<>)"
S" THEN GOTO 8020
9000 SAVE "CAR MPg"
9050 GOTO 25
9500 SAVE "CAR MPg"
9550 GOTO 5

```

# TWO-STROKE ENGINE

THIS EDUCATIONAL program, **Two-stroke Engine**, was designed for the 16K Spectrum by Tim Rose of Woolwich, London. For those interested in simple physics it describes, with working diagrams, the action of a two-stroke engine. It would be useful as a demonstration program for teaching, or for students struggling to reproduce diagrams.

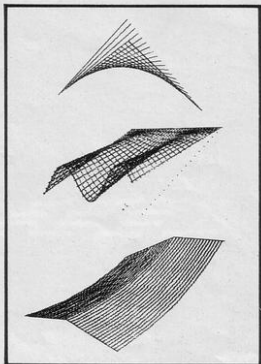
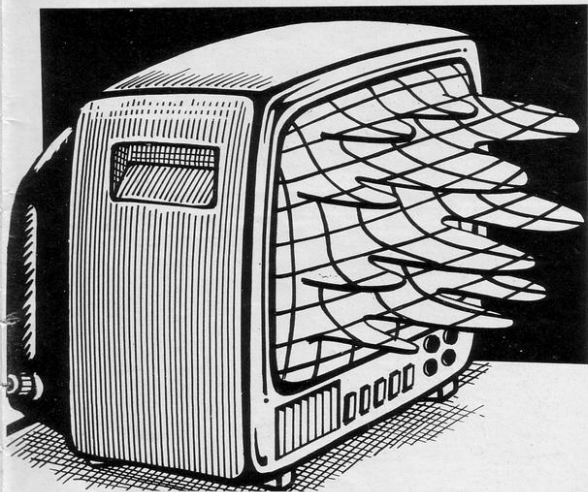


```
10 GO SUB 290: BORDER 0: PAPER
0: INK 6: CLS
20 CIRCLE 125,39,24
30 PRINT AT 20,0:"Two Stroke"
"Engine by Tim Rose 10/2/1983"
40 PLOT 102,160: DRAW 0,-50: D
RAW -12,-15: DRAW 0,-50: DRAW 70
,0,1: DRAW 0,30: DRAW -5,5: DRA
W 15,0: PLOT PEEK 23677,PEEK 236
78+12
50 DRAW -15,0: DRAW 0,4: DRAW
15,0: PLOT PEEK 23677,PEEK 23678
+12: DRAW -15,0: DRAW 0,53: DRAW
-50,0,2: PLOT 100,90: DRAW 0,-3
5: DRAW -1,0: DRAW 0,35
60 PRINT AT 0,14: INK 7: BRIGH
T 1:"a"
70 FOR a=(2*PI)-PI/6 TO 0 STEP
-PI/6
80 FOR z=0 TO 1
90 LET b=126+20KOS a: LET c=3
9+20K*IN a
100 PLOT OVER 1:b,c: DRAW OVER
1:126-h,45
110 LET d=c+45
120 OVER 1: PLOT 195,d: DRAW 44
,0: DRAW 0,20: DRAW -32,10: DRAW
-13,-10: DRAW 0,-20: OVER 0
```

```
130 IF INT c=59 THEN GO SUB 021
0
140 IF INT c=56 AND b>126 THEN
PRINT AT 0,0:"Power" :JAT 1,
14:" :JAT 2,13:" :JAT 3,
13:"
150 IF INT c=21 AND b>126 THEN
GO SUB 0230
160 IF INT c=38 AND b>126 THEN
PRINT AT 0,0:"Compression"
170 IF INT c=48 AND INT b>126 T
HEN GO SUB 0280
180 IF (INKEY="c" OR INKEY="C"
") AND z=0 THEN COPY
190 IF (INKEY="s" OR INKEY="S
") AND z=0 THEN GO TO 190
200 NEXT z: NEXT a: GO TO 70
210 PRINT AT 0,0:"Ignition"
:JAT 1,14: INK 2: BRIGHT 1:"bbbb
":JAT 2,13:"bbbbbb":JAT 2,13:"bbbb
bb":JAT 3,13:"bbbbbb": IF z=0 THEN
FOR x=0 TO 10: BEEP 0,01,10: BE
EP 0,01,20: NEXT x
220 RETURN
230 PRINT AT 0,0:"" :OVR
R 1: PLOT 134,122: DRAW 20,-20:P
1,2: PLOT 155,102: DRAW 16,0: PL
OT 166,106: DRAW 5,-4: DRAW -5,-
```

```
4: PRINT AT 9,22:"Exhaust":JAT 10
,24:"Out"
240 PRINT AT 9,0:"Fuel forced":
AT 10,5:"up": PLOT 96,40: DRAW 0
,55: DRAW 20,22: DRAW -5,0: POKE
23677,PEEK 23677+5: DRAW 0,-5:
OVER 0
250 IF z=0 THEN FOR x=1 TO 100:
IF INKEY="c" OR INKEY="C" THEN T
HE N COPY
260 IF z=0 THEN NEXT x
270 RETURN
280 OVER 1: PLOT 160,85: DRAW -
12,0: DRAW -5,-20: DRAW -4,5: PO
KE 23677,PEEK 23677+11: DRAW -5,
-5: PRINT AT 11,21:"Fuel sucked"
:JAT 12,25:"in": OVER 0: GO TO 25
0
290 RESTORE 300: FOR x=0 TO 14:
READ v: POKE USR "x"+v,v: NEXT
x: RETURN
300 DATA BIN 00001110,BIN 00001
110,BIN 00011111,BIN 00011111,32
,BIN 11001110,BIN 00000100,BIN 0
0001100,BIN 01010101,0,BIN 01010
101,0,BIN 01010101,0,BIN 0010010
0,0
310 SAVE "2 Stroke" LINE 1
```





# CONTOUR

```

5 REM ***3D BY TIM CLOS
10 PLOT 127,0: DRAW 0,175: PLO
T 0,87: DRAW 255,0
20 DIM L(127): DIM H(127)
30 LET A=43
35 LET D=-1
40 FOR T=1 TO 2
50 FOR G=1 TO 127
60 IF INKEY="" THEN PLOT G+D
/A: GO TO 100
70 IF INKEY="" THEN LET A=A+
1: PLOT G+D,A: GO TO 100
75 IF INKEY="" THEN LET A=A-
1: PLOT G+D,A: GO TO 100
80 IF INKEY="" THEN LET A=A+
.5: PLOT G+D,A: GO TO 100
90 IF INKEY="" THEN LET A=A-
.5: PLOT G+D,A: GO TO 100
91 IF INKEY="" THEN GO TO 10
100
95 GO TO 60
100 IF T=1 THEN LET L(G)=A: GO
TO 115
110 LET H(G)=A
115 NEXT G
130 LET A=131: LET D=127: NEXT
T
140 OVER 1: PLOT 127,0: DRAW 0,
175: PLOT 0,87: DRAW 255,0: OVER
0
145 INPUT "(1) SOUTH TO NORTH O
(2) WEST TO EAST ?"
10
146 IF O=1 THEN INPUT "RADIAN
?" : D: GO TO 150
147 IF O=2 THEN GO TO 200
148 GO TO 145
150 FOR A=0 TO 126 STEP 4
160 PLOT A,L(A+1)
170 DRAW 126,88+((H(A+1)-88)-L(
A+1)):D
180 NEXT A
190 INPUT "WEST TO EAST ASWELL
?" : O#
191 IF O#="" THEN GO TO 200
192 RUN
200 FOR T=0 TO 126
210 LET B=L(T+1): LET A=T
220 FOR G=1 TO 20
230 LET A=A+6.35: LET B=B+4.4
240 LET B=B+((H(T+1)-88)-L(T+1)
)/20
245 PLOT A,B
250 NEXT G
260 NEXT T
270 INPUT "SOUTH TO EAST ASWELL
?" : O#
280 IF O#="" THEN LET O=1: GO
TO 146
290 RUN
1000 LET B=43
1010 LET A=1
1015 LET D=1
1020 LET L(INT D)=B
1021 PLOT D,B
1030 LET B=B+(SIN A)
1040 LET A=A+.04: LET D=D+.5
1045 IF D=127 THEN GO TO 1060
1050 GO TO 1020
1060 GO TO 130

```

**T**IMOTHY CLOSE of Shepper-ton, Middlesex wrote **Contour** to draw three-dimensional surfaces on the Spectrum. When RUN the program will print a cross on the screen. Use keys five, six, seven, eight and nine to draw a contour line in the bottom left-hand square. Nine will draw a horizontal line; the other keys move the cursor from left to right at varying angles.

When the bottom left-hand square has been crossed, the line will move to the top right-hand square and continue. The computer will then ask "1 South to north 2 West to east?" Inputting 2 will produce 20 intermediate contours representing a gradual change from first to second contour.

Inputting 1 will produce the question Radians, requiring you to input the curvature on your south-north lines. Straight would be 0, maximum curvature around 2.5. No matter what option you select, you will be given the option of including the other.



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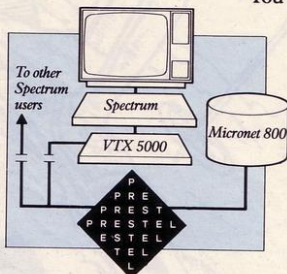
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SEVERAL SKIING programs have been included in *Sinclair Programs* previously but **Slalom** is faster than any of them and includes a variety of ski runs and difficulty levels. A course is displayed, including five gates. Reach the bottom as quickly as possible, bearing in mind that failing to go through a gate will incur a time penalty.

Move left with 5 and right with 8. Those keys allow you to travel downwards at any of seven angles and skill is needed to move in the proper direction.

Written for the 16K Spectrum by Neil Slater of High Wycombe, Buckinghamshire.

```

5 INK 0: PAPER 7: BORDER 7: G
LS
10 CLEAR 31999
20 FOR I=32000 TO 32020: READ
  V: POKE I,X
30 NEXT I
40 DATA 0,221,93,0,125,33,0,08
  ,1,255,2,221,126,0,119,17,1,69,2
  37,176,201
50 FOR I=32031 TO 32053
60 READ X: POKE I,X
70 NEXT I
80 DATA 1,33,31,125,102,46,0,1
  7,8,0,229,213,205,181,3,289,225,
  175,237,82,40,244,201
83 FOR I=1 TO 21: PRINT " (2
  *1SP:193) " (193
  '2K1SP) " NEXT I
  85 PRINT AT 9,9:"(14*1SP)" AT
  11,9:"(14*1SP)"
90 PRINT AT 10,10:"PRESS A KEY
  "
100 FOR I=56 TO 63: POKE 32000,
  I
110 RANDOMIZE USR 32001: RANDOM
  IZE USR 32032
115 IF INKEY<>" " THEN GO TO 10
  0
120 NEXT I
130 FOR I=63 TO 56 STEP -1: POK
  E 32000,I
140 RANDOMIZE USR 32001: RANDOM
  IZE USR 32032
145 IF INKEY<>" " THEN GO TO 10
  0
150 NEXT I
160 GO TO 100
180 POKE 32031,1
190 INK 0: PAPER 0: BORDER 0: C
  LS
200 INPUT "COURSE NUMBER:":R: R
  RANDOMIZE R
210 INPUT "DIFFICULTY:":DF
215 IF DF<2 THEN GO TO 210
220 INPUT "CONTROLS ARE: 5-LEFT,
  8-RIGHT PRESS ENTER.
  "J LINE A#
230 DIM F(5): FOR I=1 TO 5
240 LET F(I)=INT (RAND*236)+4: I
  F I=1 THEN LET X=100: GO TO 260
250 LET X=F(I-1)
260 IF ABS (F(I)-X)>DF*5 THEN G
  O TO 240
270 NEXT I
280 DIM A(7): DIM B(7): FOR I=1
  TO 7: READ A(I),B(I): NEXT I
290 DATA -6,-1,-4,-1,-2,-2,0,-3
  ,2,-2,4,-1,6,-1
300 LET T=D#
310 LET D#4
320 FOR I=1 TO 5
330 PLOT F(1),175-I*30: DRAW 0,
  0: DRAW -3,-2: DRAW 3,-1: PLOT F
  (1)+16,175-I*30: DRAW 0,0: DRAW
  -3,-2: DRAW 3,-1
340 NEXT I
350 PLOT X,Y
360 PRINT AT 0,0:"TIME=0"
  
```



# SLALOM

```

370 LET N=145: POKE 32000,56: R
  ANDOMIZE USR 32001: BEEP ,5,20
380 PAPER 7: BORDER 7
1000 LET D=D+(INKEY<"8" AND D<7
  )-(INKEY<"5" AND D>1)
1010 IF X+KD>>255 OR X+KD<<1 T
  HEN LET D#4
1020 IF Y+KD<>N THEN GO SUB 15
  00
1030 LET T=T+1: PRINT AT 0,6,T
1040 DRAW A(0),B(0): LET X=X+KD
  (0) LET Y=Y+KD(0)
1050 GO TO 1000
1500 LET N=N-30: IF N=-30 THEN G
  O TO 2000
1505 LET 0=(175-N)/30-1
1510 IF N<0 THEN LET N=0
  
```

```

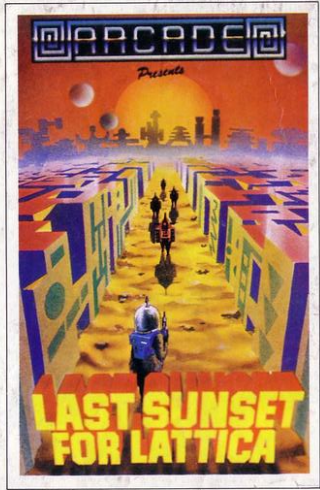
1520 IF X>F(0) AND X<F(0)+16 T
  HEN POKE 32031,2: RANDOMIZE USR
  32032: RETURN
1530 BEEP ,2,-2: BEEP ,3,-5: LET
  T=T+30: RETURN
2000 FOR G=1 TO 20: FOR I=8 TO 5
  6 STEP 0: POKE 32000,I: RANDOMIZ
  E USR 32001: NEXT I: NEXT G
2010 PRINT AT 0,17:"TIME=";T;" U
  NITS"
2020 INPUT "SAME COURSE ? ":LIN
  E A# LET A#CHR$(CODE A#): IF A#
  ="Y" THEN RESTORE 200: PAPER 0:
  BORDER 0: CLS: RANDOMIZE R: GO
  TO 220
2030 POKE 32031,6: RANDOMIZE USR
  32032: RUN
  
```



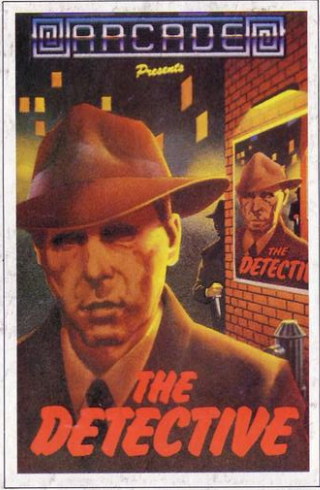
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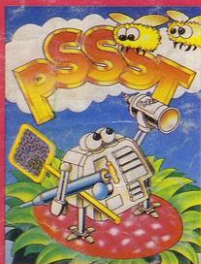
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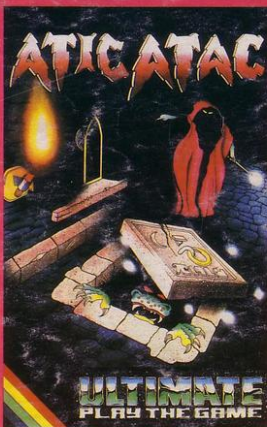


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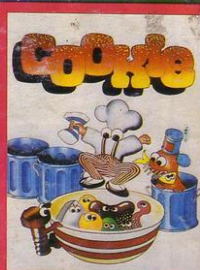
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